EMBEDDING KNOWLEDGE MANAGEMENT STRATEGIES IN THE KINGDOM OF SAUDI ARABIA CONSTRUCTION INDUSTRY

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A thesis submitted in partial fulfilment of the requirements of the University of Wolverhampton for the degree of Doctor of Philosophy (PhD)

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Signature……

Date…….

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DEDICATION

This thesis is dedicated to my father Mansour, my mother Hassah, my husband Hani, son Ahmed, daughter Leen, brothers Mishary, Abdulrahman, and Ahmed and sisters Nauf and Rahaf.

ABSTRACT

The Kingdom of Saudi Arabia (KSA) construction sector is an important industry and contributes approximately 20% of the GDP. It has been the most significant economic activity outside the oil sector. However, uncertainty, complexity, sustainability, climate change, and Saudi Arabia National Policy Plan 2030 are among the most important features of the current construction business environment in the KSA. As organisations try to meet these complex challenges, they need to be innovative. It is widely recognised that knowledge is an essential strategic resource for a firm to retain a sustainable competitive advantage. Although Knowledge Management (KM) has been widely practiced in the western countries, there is a little evidence in the KSA especially in the construction industry. Therefore, this research focuses on key KM strategies that the KSA construction organisations implemented en-route to organisational competitiveness. The findings are in the main, based on semi-structured interviews with 46 professionals from 30 construction organisations.

The data analysis revealed that, the key initiatives implemented broadly under the umbrella of KM are: knowledge sharing initiatives, knowledge capturing initiatives and knowledge mapping initiatives. Furthermore, seven types of KM specific training strategies adopted in the KSA construction organisations. The single most important driver for managing knowledge is to improve cost savings. The key challenge for managing knowledge is capturing tacit knowledge. The KM strategies contribute to improved competitiveness on cost savings. Furthermore, a framework for managing knowledge is developed and validated. The study concludes that managing knowledge is an integrated and complex process. More effective knowledge-sharing within and across construction organisations is required. Therefore, the KSA professional institutions and construction industry should support and participate in the work of knowledge-sharing groups to address perceived risks and opportunities from new technologies and processes. The results do suggests that for effective implementation of KM strategies, there is an urgent need for KSA construction industry to develop and deploy appropriate KM related management training programmes. Leadership plays an important role in breaking down barriers in achieving KM strategies. This study has made significant contributions to knowledge since there is no previous research explored on KM programmes in the KSA construction organisations. Findings of this research are limited to the KSA construction industry context only, as such, the level of generalisability outside this context may be very limited.

RESEARCH PUBLICATIONS

1. Renukappa, S., Alosaimi, H., and Suresh, S., (2019) Knowledge management related training strategies in the Kingdom of Saudi Arabia construction industry: An empirical study, *International Journal of Construction Management*, Taylor & Francis Group publishes, https://doi.org/10.1080/15623599.2019.1580002.
2. Renukappa, S., Algahtani, K., Al Nabt, S., Suresh, S. and Alosaimi, H. (2017) Investigating the use of knowledge management tools within the Saudi Arabian public sector organisations, *Middle East Journal of Management*, Vol. 4, No. 4, pp.355–371.
3. Renukappa, S., Alosaimi, H. and Suresh, S. (2017) 'Key knowledge management strategies implemented in the Kingdom of Saudi Arabia construction industry: an empirical study', *Middle East Journal of Management*, Vol. 4, No. 4, pp.309–324.
5. Alosaimi, H, Renukappa, S. and Suresh, S., (2018) Drivers and challenges for managing knowledge in the Kingdom of Saudi Arabia construction industry, *19th European Conference on Knowledge Management*, 6 – 7 September 2018, University of Padua, Padua , Italy.
6. Alosaimi, H, Renukappa, S. and Suresh, S., (2018) Managing knowledge in the Kingdom of Saudi Arabia construction organisations, International Conference on Knowledge Management Systems (ICKMS2018), April 9-11, 2018, at Florida Polytechnic University, Florida, USA.
7. Alosaimi, H, Renukappa, S. and Suresh, S., (2017) *The key challenges for managing knowledge in the Kingdom of Saudi Arabia construction industry: An empirical study*, International Conference on Sustainable Futures (ICSF) 26 – 27 November 2017, Bahrain.
8. Alosaimi, H, Renukappa, S. and Suresh, S., (2017) *A strategic framework for managing knowledge in the Kingdom of Saudi Arabia construction organisations*, 18th European Conference on Knowledge Management 7-8 September, Barcelona, Spain.
9. Alosaimi, H., Renukappa, S. and Suresh, S., (2017) *An empirical study on training provision for knowledge management in Kingdom of Saudi Arabia construction industry*, the Ninth International Conference on Construction in the 21st Century (CITC-9) "Revolutionizing the Architecture, Engineering and Construction Industry through Leadership, Collaboration and Technology", March 5th-7th, 2017, Dubai, United Arab Emirates.
10. Alosaimi, H., Renukappa, S. and Suresh, S., (2016) *Impact of Human Resources Management practices on knowledge management implementation: A case of Saudi Arabia construction industry*, 32nd International Research Conference on Business, Economics and Social Sciences, IRC-2016, December 30-31, Dubai, United Arab Emirates.
11. Algahtani, A., Renukappa, S., and Suresh, S., Al Nabt, S., and Alosaimi, H., (2017) *Usage of Knowledge Management Techniques and Technologies within the Saudi Arabian Public Sector Organisations*, 18th European Conference on Knowledge Management 7-8 September, Barcelona, Spain.

CHAPTER 1 : AN INTRODUCTION TO THE STUDY

This opening chapter discusses the background and justification for embedding knowledge management strategies within the Kingdom of Saudi Arabia construction sector. It also presents the research aim, objectives, and research questions. Furthermore, it highlights potential benefits of this current research. Finally, it presents the structure of the thesis.

1.1 BACKGROUND OF THE RESEARCH STUDY

The Kingdom of Saudi Arabian (KSA) construction is worth USD 25.3 billion and contributes approximately 20% of the Saudi Arabia GDP and continues to be, the most significant economic activity outside the oil sector (RnR Market Research, 2014, Timetric, 2014). This is particularly important in the Saudi Arabian construction sector as the Saudi Government is making huge investments in its attempt to move towards a knowledge-based society as highlighted in the vision 2030 of the Saudi Arabian National Policy Plan (Al Hussain et al., 2012).

Alotaibi et al. (2013) state that large number of mega construction projects being carried out in the Saudi private and public sectors due to rapid economic growth of the KSA. However, uncertainty, complexity, sustainability, climate change, and Saudi Vision 2030 are among the most important features of the current construction business environment in the KSA. There is also a shortage of skilled, experienced local engineers in Saudi Arabia, which is hampering the growth and development of the local construction sector.

The strict Suadization measures imposed across the industry resulted in large scale and acute shortage of skilled labour to meet the needs of the growing construction, causing delays in projects for which contracts had been awarded (Ventures, 2015). Therefore, for the KSA construction organisations, the creation of economic value by addressing the above issues now increasingly poses real profound strategic challenges. As organisations try to meet these complex challenges, they need to be innovative.

It is widely recognised that knowledge is an essential strategic resource for an organisation to retain a sustainable competitive advantage. Therefore, managing knowledge has become significant for today's organisations to meet changes and challenges. Specifically with respect to the construction industry, Yu et al., (2013) highlighted the complexity associated with the knowledge-intensive environments of the construction industry where cumulative identity of experiences and knowledge daily differ across engineers, projects and companies.

Construction project activities are knowledge-intensive activities which place construction organisations in the position to find ways to manage their knowledge more efficiently and effectively (Rezgui et al., 2010). Thus studies have reported that the need for effective knowledge management (KM) in the construction industry by reusing and sharing knowledge to improve quality, reduce time and cost of project completion and ultimately improve competitiveness (Ahmad and An, 2008; Yu et al., 2013).

Khuzaimah and Hassan (2012) pointed out that knowledge must be deliberately and consciously managed in a systematic manner to enable organisations to avoid repetition of costly mistakes, to achieve improved performance and reinvention of wheels. However, the process of managing knowledge in the construction industry is not a

simple task and requires thorough planning and preparation. Due to the intrinsic characteristics of the construction industry that is highly fragmented and transient in nature, the success rate of managing project knowledge has been somewhat minimal (Egbu and Robinson, 2005).

Knowledge is a vital resource for construction oriented organisations. In construction projects knowledge is scattered and the pool of knowledge could be lost if there is no proper channel for the knowledge created during the construction phase, for re-use on other projects (Kasimu et al., 2013). The knowledge can be divided in two categories, known such as tacit knowledge and explicit knowledge. Where, the tacit is normally defined as the personal knowledge which is difficult to formalise, written down, explained and described. In contrast of the tacit is the explicit knowledge which is easily to formalise and described, which means is easily transmitted between people (Nonaka, 1994).

In the same vein Hariharan (2015) supported this view defining the tacit knowledge is normally managed by experts, due to its difficult nature to document and share with others. In broader perspective, Gerami (2010) also share the same opinion, pointing out that, this type of knowledge is normally in the peoples mind, obtained through their experiences.

Contrasting with the tacit, explicit knowledge is a more formal and could be transferred and managed by words, numbers in different type of sources such as a books, manuals, journals, data bases and others (Steven, et al., 2010). However Suresh, et al., (2017) explained there are different forms of knowledge mentioning them as tacit, explicit, hard, soft, tangible and intangible. But the majorities of authors just recognise the KM

in the two common classifications. Shah et al (2014) established that, the tacit knowledge can be divided in two categories as a cognitive and technical. Where the cognitive is created by working models of the surrounding world, which the mind plays an important role because is who creates and manipulates all the interpretations.

The cognitive elements can comprise paradigms, beliefs, and viewpoints which are used by the mind to creates pattern and perceive and define the environment. Nonaka (1994) points out that, a person recognise and interpret the surrounding environment through the patterns of the cognitive knowledge and the technical knowledge is based on of the know-how, abilities and techniques apply to a specific situation.

McEvily and Chakravarthy (2002) acknowledge that the tacit knowledge it is specific and complex, due to once is developed inside the organisation start to generate long lasting advantage because this type of knowledge is too difficult to imitate. The organisation can expand their knowledge base through the application of existing knowledge in the company, along with the new one (Szulanski, 2003), allowing the organisation absorbs the internal and external knowledge and mix them with the pre-acquired knowledge, and creates new one (Cohen and Levinthal, 1990).

Even the explicit knowledge can be involved. This can be combined with the internal knowledge which may result in new and exclusive knowledge (Zack, 2002). Therefore, KM can be seen as a tool in order to enhance organisational performance with many academic and practitioners advocating the construction organisational benefits of KM including delivery of projects with quality, shorter design and production times, customer and staff satisfaction and market leadership (Carrillo and Chinowsky, 2006; Suresh et al., 2017).

In addition, Teerajetgul et al., (2009) emphasised that KM is in fact the formalisation of the admittance in the direction of experience, knowledge and expertise with the aim of creating new capacities, facilitate better quality performance, promote innovation, as well as improve customer worth. Kasimu (2013) acknowledges when experiences, in other words knowledge and skills are properly shared at the right time then the same problems in the construction project do not necessarily need to be solved constantly.

Hislop (2013) define KM as an umbrella term which refers to any deliberate efforts to manage the knowledge of an organisation's workforce, which can be achieved via a wide range of methods including directly, through the use of particular types of information and communication technology, or more indirectly through the management of social processes, the structuring of organisation in particular ways or via the use of particular culture and people management practices.

Alavi and Leidner (2001) defined KM as the systematic process of acquiring, organising and communicating knowledge both tacit and explicit of organisational members so that others may make use of it to be more effective and productive. Within the construction industry context the KM process has been perceived as the combination of a series of activities for identifying, capturing, sharing and using knowledge (Suresh et al., 2017). Indeed, KM strategies can help to avoid the repetition of similar mistakes from previous work and therefore improve work efficiency. In other words, KM strategies can avoid additional effort, reduce the time spent and save money (Kamara et al., 2002).

Various construction organisations in Kingdom of Saudi Arabia (KSA) are engaged in the KM strategies for leveraging knowledge within the organisation and across the

value chain. For successful KM implementation, it is essential for the KSA construction organisations to establish knowledge networks and develop an effective mechanism for knowledge mapping, capturing, and sharing (Swieringa and Wierdsma, 1992).

Considering the prevailing and emerging political and economic conditions in the KSA, the Vision 2030 presents several upcoming opportunities for the growth and development of the country. Such opportunities also highlight the need for inculcating effective KM practices within the KSA construction organisations to enhance the skills, ability and knowledge among the employees to be able to take advantage of the growth opportunities increase their profitability and sustainability (Fakeeh, 2016).

In this respect, the Vision 2030 emphasises three pillars, firstly, the position of KSA to be central to the Arabian and the Islamic countries; secondly, determination of the country to emerge as a global investment powerhouse and transform the unique strategic location of the country into an international centre that connects the three continents of Europe, Asia and Africa. The focus in these areas opens numerous opportunities of growth and expansion for the organisations, which can capitalise on such opportunities by harnessing knowledge among the employees (Shahin, et al., 2014; Fakeeh, 2016).

Thus, KM is proved to be highly essential for the growth of construction organisations of the KSA (Whittom and Roy, 2009). Although KM has been widely practiced in the western countries, there is a little evidence in the KSA especially in the construction industry. Therefore, the aim of this research is to investigate key KM strategies the KSA construction organisations implemented en-route to organisational competitiveness.

For the purpose of this research, KM is defined as "a systematic and integrative process of coordinating the organisation-wide activities of mapping, capturing, and sharing knowledge by individuals and groups in pursuit of the major organisational sustainability goals and objectives". Various construction organisations in KSA are engaged in the KM strategies for leveraging knowledge within the organisation and across the value chain. For successful KM implementation, it is essential for the KSA construction organisations to establish knowledge networks and develop an effective mechanism for knowledge mapping, capturing, and sharing.

A key challenge for construction managers in the turbulent KSA business environment is cultivating commitment of knowledge workers to the organisational vision. Therefore, managers would need to facilitate the confidence of knowledge workers in acting on incomplete information, trusting their own judgments, and taking decisive actions for capturing increasingly shorter windows of opportunity.

Nowadays, organisations employ KM as a part of their management strategies particularly, managing their tangible assets. Suresh et al. (2017) stated that construction organisations have been managing knowledge informally for years, but the challenges facing today's industry mean that most organisations need a more structured, coherent approach to KM.

The process of managing knowledge in the construction industry is not a simple task and requires thorough planning and preparation. Due to the intrinsic characteristics of the construction industry that is highly fragmented and transient in nature (Khuzaimah and Hassan, 2012), the success rate of managing project knowledge has been somewhat minimal (Lin and Lin, 2006). Knowledge and its management will become increasingly

important in organizations that are driven by ISO certification requirements. ISO 9001: 2015 was released in September 2015 which means that organizations have yet to apply the organizational knowledge clause. Wilson and Campbell (2016) work states that explicit and tacit knowledge are addressed by the ISO standards. Draft BS ISO 30401 Knowledge management systems was for public comments still 17th January 2018. It discusses the context of the organisation, leadership, planning, support, operation, performance evaluation and improvement.

Von Krogh, et al., (2000) grouped KM impact on organisational performance into three broad categories: risk minimisation, efficiency improvement and innovation. Risk minimisation is closely linked to identifying and holding onto the core competencies that the organisation has. In most construction organisations, people have been recognised as key holders of valuable knowledge. KM can minimise the risk of losing valuable knowledge by identifying, locating and capturing what is known by individuals and groups of employees that is critical for organisations survival. KM can also impact on people's learning, adaptability and job satisfaction (Becerra-Fernandez, et al., 2004). For example, KM can facilitate employees' creativity and group effectiveness through informal and formal socialisation.

According to Butler (2000) KM strategies are depending on motives of the organisation. For the construction organisations these motives could be: controlled innovation and change, cost focused, cost reduction, do more with less, reduce rework, improved productivity, staff reductions, and better reward regimes. Therefore, construction companies need to pay greater attention to their knowledge base and the way they use their existing knowledge to compete.

For organisations to have the awareness of the opportunities and potential benefits from KM training is an important aspect. Twum-Darko and Harker (2017) in their work emphasized that training seems to be the catalyst for obtaining the buy-in from an organisational perspective, i.e. that an organisation at its inception is achieved through training as the first step toward formalising knowledge sharing processes. Furthermore, Yeung et al (2016) illustrated the use of narratives to educate novices to learn from the past in a safe environment in the construction industry from where narratives for lessons learnt are costly and limited, as they are constructed from the occurrence of accidents. Although KM has been widely practiced in some countries, there is a little evidence in the KSA especially in the construction industry about training.

The aim of training is to change behaviour at the workplace in order to stimulate efficiency and higher performance standards (Cowling and Mailer, 1990).Training ensures the systematic development of the attitude, knowledge and skill behaviour pattern required by an employee in order to perform a given task adequately. Training programs yield many direct benefits such as enhanced problem-solving skills, a more competent and efficient workforce, fewer recruitment problems in obtaining qualifies employees and fewer problems with employee relations.

Tacit knowledge is more difficult to formalise, impart, exchange, or purchase because it resides in peoples' beliefs, experiences, values, organisational routines, and institutions (Huseman and Goodman, 1999). For example, in construction site safety, safety hazard recognisation is an important actualisation of tacit knowledge. Safety hazard knowledge is considered a tacit knowledge because it relies on the safety engineer's experience. Training is an area of Human Resources Management that deals with what people know and how they know; an issue of great importance in KM.

Lindstaedt and Zimmerman (2006) noted that most learning issues are dealt with by the human resources department, that's not necessarily the best department for this function, company-based learning needs to be embedded in business needs, so when a company changes its processes or procedures, the employee-training required to execute the changes develops in parallel. This kind of training can be provided within the main physical location of a company. Ideally, the main goal of internal training is to enhance the tacit knowledge that is the experimental knowledge of employees.

Yeung et al (2016) developed a training mechanism based on narratives. This was implemented for a statutory body in the construction industry in Hong Kong. It was based on narratives related to the falling of a person from height. The tacit knowledge of employees is particularly useful in addressing issues like identification of hazards, identification of waste sources, minimisation of waste, the management of emergency situations, managing relation with community, the development of preventive solutions, to name a few. It is therefore not easily codifiable and cannot be communicated or used without the individual who is the "knower". Tacit knowledge also tends to be sticky in nature. Von Hippel (1994) defined stickiness as the incremental expenditure involved in moving knowledge in a form that is useable and easily understood by the information seeker. According to Von Hippel, stickiness for the knowledge supplier comes from the tacitness of the knowledge that has to be shared, whereas absorptive capacity (organisations' or individuals ability to learn from external sources) creates stickiness for the knowledge user. Therefore, tacitness of knowledge is a natural barrier to the successful sharing of knowledge between individuals in organisations.

Many construction organisations are now engaging in KM in order to leverage knowledge both within their organisation and externally to their shareholders and customers. The Rethinking Construction report – "Respect for people: A framework for action" (Rethinking Construction, 2002) recommended that every firm and project should review it's induction training, so that the whole workforce receives details of organisational structure, immediate and long term aims, an explanation of standards and practices, rewards and penalties, and is provided with support through an effective mentoring approach.

Hughey and Mussnug (1997) noted that the underlying aim of all employee training is to increase efficiency. Mathieu et al. (1992) stated that individuals rely on training to improve their current skills and to learn new skills. It is necessary to understand the difference between training and education prior to the need for training in KM initiatives in the construction industry (Bordeianu, 2015). In distinguishing training from education, Morris (1971) considers training as the "use of specific learning, often with the use of techniques that can be identified and continually improved". For education, he noted that it is "a broader process of personal change in abilities and attitudes which may take place independently of its application of work".

Hari et al., (2005) defines training as teaching (a person or animal) a particular skill or type of behaviour through regular practice and instruction. The operational definition for training in this study adopts Armstrong's (1996) definition, which purports that training usually refers to learning a specific task or job, the skills and behaviours of which are specifically defined, whereas development is an ongoing process involving changing people. This implies that training is more of a mechanistic process, which is job-centred, while development involves educating the workforce, which is person-

centred (Fryer, 2004). It is important to note this distinction in order not to use the terms interchangeably resulting in confusion.

Anecdotal evidence and empirical results (Curran and Stanworth, 1981) suggest that the lack of training in firms hinders growth. By reading a document or manual about their jobs and the organisation, and by reflecting upon it, trainees can internalise the explicit knowledge written in such documents to enrich their tacit base (Nonaka and Toyama, 2003).

Thiry (2004) suggests that training programmes are embedded into a complex context where cultural and competitiveness issues are often at odds with each other. Ulrick (1997) suggested that organisations need to be able to capture the tacit knowledge of its employees and to do this effectively; it is argued that management needs to involve and engage employees fully in the activities of the organisation.

Critical review of literature revealed that there are a number of challenges facing the Saudi construction organisations. For instance, researchers, such as Fass et al. (2017), Jannadi and Bu-Khamsin (002) and Assaf and Hejj (2006), found ‘construction safety’ where Baxter (2014), Alkharashi and Skitmore (2009), and Aburas (2011) identified ‘resource constraints’, ‘budget overrun’, ‘rush up projects’, and ‘project delay’, and ‘inefficiency’ are some of the common characteristics of Saudi construction organisations.

To respond to these challenges, Fernie et al. (2003) stress that knowledge management between different context is viewed as an essential source of sustainability of the construction sector. Reige (2005) identified some of the factors impacting knowledge

sharing at three different levels are at an individual level (lack of communication skills, social networks, difference in network culture, an overstress position structures, time constrains, and trust), at an organisational level (resources constrains, economic viability, lack of human resources management, physical environment) and at technological level (resistance to technological change, unrealistic expectations of IT systems, integrating, problems in building IT platform, and updating the IT system regularly).

The development of the research work started with the literature review. The review of literature involved background study on KSA construction industry and varied areas of knowledge management. This resulted in the development of research aim and research questions.

1.2 RESEARCH AIM AND OBJECTIVES

The aim of this research is to investigate how the KSA construction organisations implementing KM strategies en-route to organisational competitiveness. The specific objectives are:

1. To explore and document the key drivers for implementing knowledge management strategies in the KSA construction industry
2. To investigate and document the key knowledge management strategies that are currently being implemented in the KSA construction industry.
3. To critically appraise and document the key knowledge management related training strategies adopted in the KSA construction organisations.

4. To critically appraise and document the main challenges associated with implementing key knowledge management strategies in the KSA construction industry.
5. To explore the extent to which knowledge management strategies contribute to competitiveness of the KSA construction industry.
6. To develop and validate a framework for managing knowledge for the benefit of KSA construction organisations.

1.3 RESEARH QUESTIONS

A set of research questions were developed through a review of the existing literature to guide the research. Hence, the research study sought to collect descriptive data to answer and examine the following research questions: (see Table 1.1)

Overall research questions are:

1. What are the key drivers that have fuelled the need for managing knowledge within the KSA construction organisations?
2. What are the key KM strategies currently being implemented in the KSA construction organisations?
3. What are the current KM specific training strategies adopted in the KSA construction organisations?
4. What are the future KM specific training strategies adopted in the KSA construction organisations?
5. What key challenges do KSA construction organisations face in implementing knowledge management initiatives?
6. To what extent do knowledge management strategies impact on competitiveness of the Kingdom of Saudi Arabia construction industry?

Table 1.1: Traceability matrix of research objectives, research questions and chapter addressed

Sl. No.	Research Objectives		Research Questions	Chapter addressed
RO1	To explore and document the key drivers for implementing knowledge management strategies in the Kingdom of Saudi Arabia construction industry	**RQ1**	What are the key drivers that have fuelled the need for managing knowledge within the KSA construction organisations?	**Chapter 5**
RO2	To investigate and document the key knowledge management strategies that are currently being implemented in the Kingdom of Saudi Arabia construction industry.	**RQ2**	What are the key KM strategies currently being implemented in the KSA construction organisations?	**Chapter 6**
RO3	To critically appraise and document the key knowledge management related training strategies adopted in the KSA construction organisations.	**RQ3**	What are the current KM specific training strategies adopted in the KSA construction organisations?	**Chapter 7**
		RQ4	What are the future KM specific training strategies adopted in the KSA construction organisations?	
RO4	To critically appraise and document the main challenges associated with implementing key knowledge management strategies in the Kingdom of Saudi Arabia construction industry.	**RQ5**	What key challenges do KSA construction organisations face in implementing knowledge management initiatives?	**Chapter 8**
RO5	To explore the extent to which knowledge management strategies contribute to competitiveness of the Kingdom of Saudi Arabia construction industry.	**RQ6**	To what extent do knowledge management strategies impact on competitiveness of the Kingdom of Saudi Arabia construction industry?	**Chapter 9**
RO6	To develop and validate a framework for managing knowledge for the benefit of KSA construction organisations.	Framework		**Chapter 10**

Legend:

RO = Research Objective
RQ = Research Question

1.4 BENEFITS OF THE STUDY

The study will be of benefit to individuals, managers and directors of construction organisations. The results of the study will:

- Assist construction organisations in capturing, retaining and sharing knowledge. It will help in delivering the "right/appropriate knowledge" to the right person at the right time.
- Reduce reinventing the wheel and the repetition of mistakes.
- Increase awareness and adoption of KM strategies as it could lead to improvement in an organisation's effectiveness and efficiency in its business activities.
- Improve KM processes, communications of best practices in knowledge management, and through efficiency gains in this regard.
- Assist decision makers to identify and implement key KM strategies for the benefits of construction organisations.
- The developed assessment framework provides broader guidance for organisations to implement KM initiatives into day-to-day practices. The framework could also help decision makers to craft and deploy key strategy to improve competitiveness. Even though the framework which has been developed and validated with experienced professionals, it has not been tested within an organisation.

Some of the outcomes of the current study have already been published in three internationally peer reviewed journal paper and seven referred international conferences papers attended by academics and practitioners. This research has therefore contributed both to the industry as well as the academic community.

1.5 SCOPE AND LIMITATIONS OF THE STUDY

The empirical scope of this study is limited to KSA construction sector organisations. The unit of analysis adopted for this study is the 'organisation' and the embedded unit is 'individual employee'. Therefore, this study does not report the differences between private and public sector or micro enterprises, small and medium-sized enterprises' and large organisations approach to KM.

The research reported in this study is largely exploratory in nature. This is because of the inductive nature of the methodology adopted. The goal of this research is to answer the research questions rather than testing hypothesis. Additional research with more elaborate and articulated designs is therefore called for, to further explore the complex relationships with implementing KM strategies for improved competitiveness.

A framework for managing knowledge for the benefit of KSA construction organisations is developed and validated. Even though the framework which has been developed and validated with experienced professionals, it has not been tested within an organisation.

1.6 STRUCTURE OF THE THESIS

The thesis has been organised in a logical manner in order to enable the reader to gain insight and understanding of how the key research objectives and research questions have been achieved. The layout of the thesis is in a logical sequence, commencing with the introduction to the study in chapter 1 to the conclusions and recommendations in chapter 11.

The structure is as follows: a review of literature was conducted at each stage to enable a better understanding of the research topic of the current study. This forms the basis of the study and allows for developing research questions. Furthermore, research methodology employed for this study is discussed. Semi-structured interviews with directors, advisers and managers responsible for embedding KM strategies within the KSA construction organisations were collected for the study. Results of the qualitative data analysis are reported.

Chapter 1 – explains the background and justification for the study. Then it discusses the research aim, objectives and research questions. Also it highlights the potential benefits of the study, scope and limitations of the study and gives a brief overview of the other chapters.

Chapter 2 and 3 – reviews the relevant literature on varied areas of KM and human resources issues. A thorough review and analysis of the relevant literature helped to identify research gaps.

Chapter 4 – discusses the research methodology that is used to empirically investigate the research aim and objectives. The chapter also discusses why a qualitative methodology was adopted. Furthermore, the sample size chosen for the study has been explained.

Chapter 5 – discusses the drivers for managing knowledge in the KSA construction organisations. The results discussed in this chapter are based on qualitative data. Overall, chapter 5 addresses objectives 1 of this study. Finally, chapter 5 concludes with a summary.

Chapter 6 – primarily reports on the KM strategies that have been implemented in the KSA construction organisations. The results discussed in this chapter are based on qualitative data. Overall, chapter 6 addresses objectives 2 of this study. Finally, chapter 6 concludes with a summary.

Chapter 7 – primarily reports on the KM related training strategies that have been implemented in the KSA construction organisations. The results discussed in this chapter are based on qualitative data. Overall, chapter 7 addresses objectives 3 and 4 of this study. Finally, chapter 7 concludes with a summary.

Chapter 8 – explores the key challenges for implementing KM related strategies in the KSA construction organisations. The results discussed in this chapter are based on qualitative data. Overall, chapter 8 addresses objectives 5 of this study. Finally, chapter 8 concludes with a summary.

Chapter 9 – reports on the contribution of KM strategies on the competitiveness variables. The results discussed in this chapter are based on qualitative data. Overall, chapter 9 addresses objectives 6 of this study. Finally, chapter 9 concludes with a summary.

Chapter 10 – discusses the development of a framework for managing knowledge for the benefit of organisations. The findings from the previous stages of the research study were taken into consideration in the development of the framework. Finally, chapter 10 concludes with a summary. Overall, chapter 10 addresses the sixth objective of the current study.

Chapter 11 – focuses on the conclusions and recommendations drawn from this study. It summarises the key findings of this research and also provides recommendations for the future research in the area of KM for improved competitiveness.

CHAPTER 2 : A REVIEW OF LITERATURE RELATED TO KNOWLEDGE MANAGEMENT

2.1 INTRODUCTION

This chapter presents a thorough review of literature in the area of knowledge management (KM). Key drivers, key KM initiatives, key challenges associated with managing knowledge, and the impact of KM initiatives on organisational competitiveness is discussed. This chapter concludes with a summary.

2.2 UNDERSTANDING KNOWLEDGE MANAGEMENT

Managing knowledge effectively in an organisation to gain sustainability had been a central issue for the management researchers and professional for decades (Easterby-Smith, 2011; Hussain et al. 2004). The emergence of the knowledge management (KM) became inevitable in the age of globalisation and information and communication technology (Uden et al. 2014; Malhotra, 2000) as a business organisation has to perform in a highly competitive environment (Perumal, 2006). Nowadays KM has become a principal area of strategic management philosophy (Edvardsson, 2008) which is widely practiced by the organisation to develop, share and apply knowledge to the company to gain sustainability in a competitive environment (Petersen and Poulfelt, 2002).

Researchers such as Evans (2003); Currie and Kerrin (2003); and Carter and Scarbrugh (2001), tried to find out the impacts of human resources management practices on KM implication and revealed that creating a learning culture is a heart of the KM and one of the principal practices of human resource management. According to the authors like Liebowitz

(2012) and Little et al. (2002), the implementation of KM impacts largely in HRM practices as one of the key factors in the growth of interest in KM in the 1990s was rediscovery the employees have skills and knowledge that are not available to (or "captured" by) the organisation. Therefore, a particular focus will be paid to analyse the impact of HRM practices on KM implication in this literature review. This literature review sets out, first, critical review of current frameworks for KM Practices; second, reviewing of HRM practices; and finally, reviewing of research in the impact of KM practices on the competitive advantage.

2.2.1 Understanding Knowledge

Even among specialists, there is no concurred meaning of KM. One purpose of the absence of such agreement stems from the fact that individuals working with KM come from an extensive variety of disciplines, for example, sociology, psychology, strategy, management science, organisational science, engineering, etc. In any case, most of the definitions take an exceptionally pragmatic approach to knowledge, and are comparable to this single issue, i.e. how knowledge can facilitate organisational efficiency (World Bank, 1998). In general, this term is used heavily to allude to a wide range of customs, approaches, methodologies and practices identified by producing, obtaining and spreading knowledge significant to the operations of an organisation (Hlupic et al., 2002).

Additionally, there is an absence of widespread agreement about the meaning of knowledge itself. Some consider knowledge as a product that can be put away for future and made independent of circumstances. Many others take knowledge as extremely reliant on context

and communal by nature. Thus, the authors like Hunter et al. (2002) and Hustad (2004) mentioned that the need for separating the ideas of information, data, implicit knowledge and explicit knowledge has been given specific significance. Busch (2008) mentioned that data can be seen as real, raw material or signs without any significance. Information is the data identified with other relevant data that is processed into organized and utilitarian forms inside a framework, and has importance and specific meaning– for instance, customer database or indexes (Pivert and Zadrozny, 2014).

According to Becerra-Fernandez and Sabherwal (2015), basic and widespread categorization of organisational knowledge is made with respect to the explicit-implicit aspect of knowledge. In such categorization, Liebowitz (2012) states that *explicit knowledge* is thought to be objective, proper and empirical. Tatnall (2013) explained that it could be communicated clearly in numbers, words and details. Consequently, *explicit knowledge* can be exchanged through proper and precise techniques as official articulations, principles and methods. Thus, *explicit knowledge* is anything but difficult to organize or arrange systematically and classify.

Choo (2006) defined *implicit knowledge* as, by difference, is situational, based on or influenced by personal feelings, tastes, or opinions, and closely attached to the individual's experience. Oncioiu (2013) further added to the definition to the implicit knowledge that giving *implicit knowledge* a formal status, documenting it and conveying it to others is really hard. Experiences, instinct, convictions, individual aptitudes and specialty to tackle an intricate issue are cases of implicit knowledge. Explicit knowledge and implicit knowledge are strongly interconnected, so a bisecting diagram is hard to sketch in reality (Hunter et al. 2002; Daft 2001). As Kluge (2001) stated, “A sophisticated recipe is meaningless to someone who has never stood in a kitchen, and legal text can be all but incomprehensible without

some legal training". In order to comprehend a composed document (explicit) completely, it frequently requires a lot of experience (implicit).

Due to the dissimilar characteristics of explicit and implicit knowledge the KM procedure differs for these two sorts of knowledge. With a view to enhancing the utilisation of ICT in KM, specifically, in knowledge re-utilisation, Lynn Markus (2001) begins an earnest attempt. She considers knowledge construction as given (as in examination and advancement of a new product). Consequently, her endeavours are totally of explicit knowledge nature. However, she splits the KM procedure into distinct the phases: *documenting* knowledge, *packaging* knowledge, *distributing knowledge* and re-using *knowledge*.

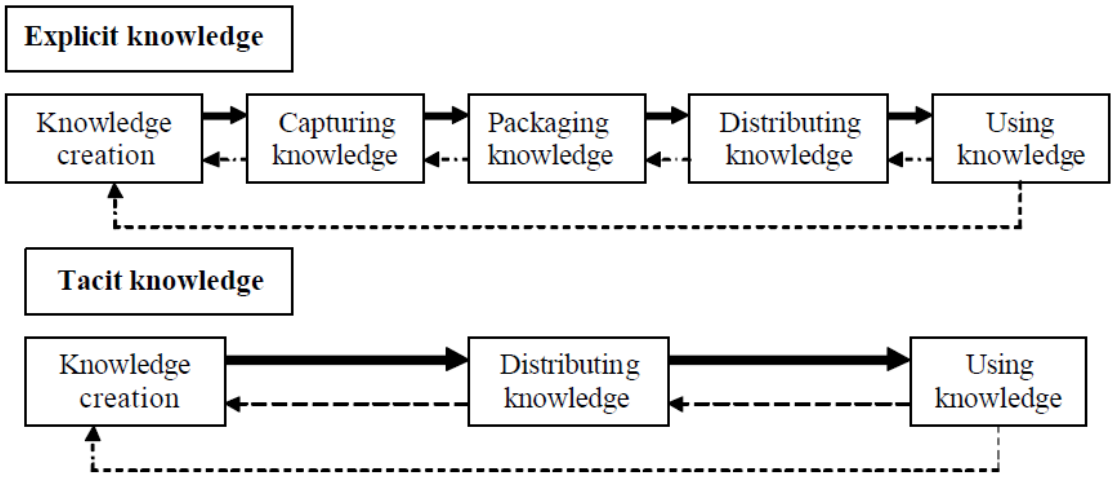

Figure 2.1: Knowledge management process (Explicit and Tacit)

Source: Markus (2002) and Daft (2001)

As per Markus (2002), Documenting or capturing knowledge can take place in no less than four ways. (1) Capturing the knowledge can take place in an arrangement; which is provided by persons responsible for leading or coordinating the work of a group using conceptualizing and creative techniques, maybe intervened by the utilisation of electronic conference

frameworks. (2) Capturing can be an aloof by-product of the working procedure of effective groups, which naturally produce documents of their casual electronic correspondences that can be sought later. (3) It can include an intentional tactic for later re-utilisation, for example, construction of an information stockroom, specialist help documents. (4) Capturing the knowledge can take place by making organized records as a component of a purposeful knowledge re-uses policy.

Specific knowledge pushing, particular meetings and after action re-evaluation are included in an effective distribution of knowledge. Knowledge dissemination can be passive as sending mass mail, pamphlets, or creating a notice board. Lynn Markus partitions utilising knowledge into recollect (that data has been reinstated, under which categorization, and in what place) and recognition (that the information is really applying the knowledge, and addresses the client's issues). Packaging knowledge is a procedure of selecting, cleaning, organizing and designing documents in accordance with a sorting plan. The implicit knowledge management procedure has less part than the explicit one. McAdam and Reid (2001) suggested that, for employees, knowledge management can mean expanded the independence and inherent advantage of expanded learning. They indicated that the advantage of KM was to deliver commercial value for the client, expanding modernization. Thus, an alternate model of knowledge utilisation is given by McAdam and Reid (2001).

In the knowledge utilisation phase, it is regularly disclosed that a certain sort of knowledge is not accessible or that particular knowledge is outdated. Usually, that would imply that new knowledge must be created (knowledge creation). Likely no organisation begins at square one, as it already has knowledge that is holding up to be disseminated and utilised. Correspondingly, it is likely that in the dissemination stage a few issues in the packaging

phase might be found, prompting changes in the packaging of knowledge. Solid arrows in Figure 2.1 demonstrate the essential stream heading while the dotted arrows demonstrate the most recursive streams. The repetitive arrows demonstrate that KM is not a straightforward chronological process. The utilisation of implicit knowledge is like that of the explicit one deciphered by McAdam and Reid. Dissemination of implicit knowledge has been most effectively accomplished by groups of practices, dialog, gatherings, casual conversations, meetings, apprenticeship, lectures and leadership. It is true that the knowledge creation procedure is alike in both the cases. But primary chronological contrasts lie in the dissemination of knowledge.

2.2.2 Definitions of KM

Table 2.1: Different perspectives on KM definitions from literature review

Davenport (1994)	"…is the process of capturing, distributing, and effective using knowledge."
Duhon (1998)	"…is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures and previously un-captured expertise and experience in individual workers."
Skapinker (1999)	"…using the ideas and experiences of employees, customers and suppliers to improve the organisation's performance."
Clark, Coakes, Clarke (2005)	"…the process necessary to capture, codify, and transfer knowledge across the organisation to achieve competitive advantages."
McElroy (1999)	"…is a management discipline that seeks to enhance organisational knowledge processing."
Tiwana (2000)	"…management of organisational knowledge for creating business value and generating a competitive advantage."
Pan, Newell, Huang, and Galliers (2001)	"…involves a range of processes including creating, sharing, integrating, storing, and reusing knowledge."
Bhandar, Pan, and Tan (2007)	"…process through which relevant knowledge is combined, applied and assimilated."

From the above table, various scholars defined KM from different perspectives. The definitions are somehow changed over the period. For examples, the scholars, Davenport (1994) and Bhandar et al. (2007) stressed in the process view in their definitions of KM, whereas researchers like Skapinker (1999), McElroy (1999) and Tiwana (2000) emphasised on the application of the knowledge in the KM definitions. From the analysis of the various definitions provided by the scholars it has been found that KM is a complex process comprises of developing, creating, innovating, integrating the existing knowledge; preserving and disseminating that within the organisation to obtain sustainability.

Brief Historical Milieu

The researchers, Deloitte, Touche, and Tohmatsu (1999) identified some of the crucial developmental phases of KM which have been flourished throughout the history of mankind. The phases are briefly described as follows:

Industrial Era: 1800s

History of KM dated back to the industrial era in the 1800s where organisation started to think everything including management scientifically.

Transportation Technologies: 1850s

In this period, people started to think to make different types of transportation including automobiles, rail transports and ships in the 1850s and focused on knowledge management.

Communications Era: 1900

With the innovation of the new way to communicate with the mass people through telegraph, telephone, radio and later on television organisation started to manage knowledge in their organisation.

Computerisation Era: 1950s

Knowledge management has started with the history with the computerisation in the 1950s. It is also considered as the era of modern computing technology.

Visualisation Era: 1980s

In this visualisation era, organisation applied their knowledge in data visualisation techniques. Which is one steps ahead in the knowledge management?

Personalisation and Profiling Technology Era: 2000

In this era early efforts at personalisation and profiling technologies beginning in the year 2000 which has emerged processing of the knowledge.

Different Phases of KM

According to Koening (2012) identified three different stages, information management, HR and corporate culture, Taxonomy and Content Management, in the development of the knowledge management. Followings are the brief explanation of the three different stages:

- **First Phase: Information Technology**

Indeed the notion of KM mainly shaped by information technology (IT) which has been described an equation metaphor as "by the internet out of intellectual capital" by Koening in 2012. According to McGraw and Harrison-Briggs (1989) knowledge-based system emerged with the key development of information technologies (IT) as IT focuses on the capturing experts knowledge on the diskette, audio visual tutoring systems. The authors further explained knowledge management is gathering complex information, familiarising the domain, analysing and design. Besides capturing knowledge, must hold the elements of translations into the code, tested them and refined. The design and development of the knowledge-based systems which gave a birth of a new discipline called knowledge management. Thus like the knowledge-base system the aims of the knowledge management is to capture, validate and following the technology-mediated distribution of precious knowledge from specialists.

Knowledge management appeared in the book formal and appeared as an integral part of management philosophy at the beginning of 1990. Since it became available to the management professionals and practitioners, the popularity of KM picked up momentum. Prusuk (1999) traced the early practitioners of KM and mentioned that the company McKinsey was one of the first implementers of KM in their organisation where Earnest and Young arranged the first conference on KM in Boston in 1992.

- **Second Phase: HR and Corporate Culture**

The second stage of KM appeared when the organisation first realised harnessing information technology in their firm is not sufficient enough to sustain in the tough competitive marketplace further to knowledge sharing, human and cultural dimensions of the organisation are needed to be acknowledged (Koening, 2012). Organisation understood that successful implementation of KM required significant changes in the corporate culture. Two principals ideas, learning organisation by Senge (1990) and tacit knowledge by Nonaka and Takeuchi (1995) structured KM as a discipline.

- **Third Phrase: Taxonomy and Content Management**

The third phrase emerged when firm realised the importance of content and irretrievability of content. This phase emphasised the enterprise content management and content management had become a dominant track. However, Dalkir, (2011) summarised some of the early research in the field of KM.

2.2.3 Different KM School of Thoughts

The scholars, Bray (2007) and Robbins (2006) mentioned the discipline KM exists in a various school of thoughts. With the development of KM as a discipline, there are a number of schools of thoughts surround both the theory and practices of KM. Followings are some of the school of thoughts in KM.

Techno-centric: The researchers, Alavi and Leidner (1999); Rosner, Grote, Hartman, Hofling and Guericke (1998) explained knowledge management is more techno-centric concentrates on technology which enhance the knowledge development and sharing.

Organisation-centric: The authors like Addicot, McGivern, Ferlie (2008) explained KM is related to the organisation as an organisation can design, process and facilities the knowledge in a best possible way. Russ, Fernando, Naveda (2010) explained different dimension of knowledge management and its implications as KM is much needed for the organisational learning, environment, relationships, Lucas of control, organisational network, deciding organisational boundaries, making strategy, formulating a business model, and entrepreneurship. The author further established close relationships between the KM strategy and other business strategies like HR strategy, innovation strategy, supply chain strategy, quality strategy, marketing strategy, environmental strategy, and MIS strategy.

Ecology-centric: Bray (2007) and Carlson, Marcu and Okurowski (2001) mentioned that KM is more ecological centric with a principal focus on the interaction of people, identity, knowledge, and environmental factors as a complex adaptive system similar to natural ecosystems.

2.3 KEY DRIVERS FOR KM

Buono and Poulfelt (2005) explained some of the key drivers of KM from the theoretical and empirical perspectives. From the theoretical perspective key KM drivers are integrating, productivity, creating, transferring, measuring, retaining and reflecting (table two). On the other hand, empirical perspective, key KM drivers are meeting rooms, colleagues, seminars, technology, physical structures, manuals and physical workplace. From the theoretical perspectives, KM drivers can be conceptualised in an endless ways. According to Orlikowski (2002) the different approaches to outcomes and key KM drivers have been, and still are being, applied to establish ever more complex conceptualisation that seek to illustrate or grasp the essence of KM. For example, Buono and Poulfelt (2005) mentioned that KM more concentrates on creating knowledge than transferring knowledge.

Table 2.2: Key drivers for KM: Theoretical Perspectives

Outcome/Context	Unit	Relation	Knowledge
Integrating	Rules, Routines Job rotation, Yellow pages, coordinating mechanisms, sharing identity, Interacting face-to-face, culture		
Productivity	The Physical and social environment of the workplace		
Creating	Organisational forms Communities of practice; Group work Incentive systems; Mentoring programs; Trust; Loosely coupled systems; Interrupting events	Interaction; Communication; Channels; Relations; Culture; Intensive communication	
Transferring	Technology culture, Rewards Leadership Measurement Social Ties	Relations, knowledge storage and delivery, prestige, know-who, human mobility	
Measuring	Methods and models		
Retaining	Incentives		
Reflecting	Mapping internal expertise		Social Process

Source: Buono and Poulfelt (2005)

2.4 CHALLENGES FOR KNOWLEDGE MANAGEMENT

Knowledge is a major economic challenge for the modern business world. Consequently, effective knowledge management has become a vital issue for organisations (Remus, 2012). Managing knowledge requires a strategic dedication, involves the proper study of knowledge, expertise and technology in the organisation, and integrates a variety of well-adapted tools. The Success of any innovative business largely lies in creating, capitalising and sharing knowledge (Reinhardt, 2004). In the way of managing knowledge effectively and successfully today's managers face numerous challenges.

Establishing and ensuring security measures

In order to make KM system efficient and fruitful, information that are considered sensitive should be safeguarded from unauthorised users; at the same time, easy access should be ensured to the users with appropriate identification and qualification (Reinhardt, 2004). As a result, ensuring an exact level of security measures in the KM system is considered as one of the prime challenges for managing knowledge.

Motivating people

Motivating people for sharing knowledge has always been a key challenge for managing knowledge effectively. Long, Liu and Liu (2012) deploying a KM system where people are not interested in sharing knowledge is of no use. The culture within an organisation plays an important role to inspire people in this regard. Technology cannot help conquering challenges related to the culture of an organisation (Dalkir, 2005).

Leaders and managers should develop an environment within the organisation that motivates people to learn, share, and improve knowledge.

Advancing at the same rate as technology

Transferring information swiftly and efficiently is an important issue in knowledge management. The way and means of dispensing knowledge hugely affect the outcome of a knowledge management system as well (Reinhardt, 2004). Therefore, it has always been a challenge for managing knowledge to structure KM system with quick, smart, responsive, and advanced technology, and thus keep up with technology.

Evaluating knowledge

Knowledge is generally originated and obtained from human affairs, interaction and experience. Consequently, it can be evaluated in terms of qualitative measures and is far more complex to quantify (Firestone and McElroy, 2004). Therefore, while measuring knowledge, managers should concentrate on shared purpose of information instead of endeavours and results.

Conquering shared leadership

The Knowledge management system generally gives employees a right or opportunity to express a choice or opinion. KM lets other people come out as a leader of an organisation, which in turn can occasionally cause internal disagreement and clash (Lee and Ahn, 2007).

Ensuring data accuracy

With knowledge management, there always remains a challenge to keep the information accurate and up to date by removing erroneous and obsolete ideas. Before harvesting and distributing, knowledge management system should validate important data

produced by a group of an organisation (Reinhardt, 2004). Dalkir (2005) mentioned that knowledge management ensures data accuracy and help management to make a decision in real time.

Standardising information effectively

In order to make information meaningful and useful to other people in the organisation, data generated by individuals or groups may require mapping or standardisation and the scholars like Pauleen and Murphy (2005) and Zhou and Li (2012) figured out that standardisation of information to adjust to local markets has been a key challenge for knowledge management.

Ensuring information relevancy

In the quest for making information valuable and useful to people inside the organisation, driving them towards the overall organisational goal successfully, knowledge management system should provide information with appropriate raw-data and reference that support and precisely answer the questions being asked by the user (Keyes, 2006). Thus, ensuring data relevancy has become a key challenge to avoid overloading users with misleading, pointless, and superfluous data.

Determining where knowledge management should reside

Organisations need to resolve what drives its knowledge sharing actions and who will be in charge of keeping the system up (Reinhardt, 2004). In this way, organisations need to decide which department KM should fall under - HR, IT, or communications. For example, Talet and Mansour (2011) studied impacts of lack of knowledge sharing during project progress and revealed that many projects failed because of lack of knowledge among the project team. Therefore, gathering the right knowledge and right time can produce a successful project (Fuller, et al., 2012).

Rewarding dynamic people

With a view to encouraging dynamic people who contribute to an information database, organisations should reward them with recognition of their participation. Such rewarding culture will not only inspire them to continue contributing but will also encourage other people to join (Lee and Ahn, 2007; Dalkir, 2005).

2.5 BENEFITS OF KNOWLEDGE MANAGEMENT

The authors Santosus and Surmaz (2001) recommend that a 'creative approach to knowledge management can result in improved efficiency, higher productivity and increased revenues in practically any business activity'. Kerr (2003) tried to identify the rationale for introducing knowledge management in the organisation and revealed seven reasons and these are (i) today's organisation are driven by innovation; (ii) consistent changes in inter-organisations enterprises due to mergers, acquisition and takeover; (iii) networked organisations and the need to coordinate geographically dispersed groups; (iv) rapid development of the product and market diversification; (v) competitive marketplace due to globalisation; (vi) technological impacts on business such like e-commerce; and (vii) knowledge transfer due to staff mobility especially in the multinational corporation.

The author Hokkanen (2002) stressed that every organisation can benefit from its people learning, sharing, collaborating, innovating, and reusing. KM can pick up aptitude of an organisation to attain growth. KM streamlines the problems, ideas, information, and operation towards the overall goal of an organisation, and thus drives them towards productivity.

Competitive Advantage

Lengnick-Hall and Lengnick-Hall (2003) mentioned that consistent development in the information technology poses challenges to business and organisation can seize competitive advantages by deploying knowledge management in their organisation. Economist Intelligence Unit (2005) conducted a survey and revealed that effective knowledge management can help an organisation to gain competitive advantages as it improved customer relationships, better visibility of internal business processes and performance, faster and sound decision making, more effective product and service development, smoother collaboration across teams and departments, greater customisation of product and services, improved compliance, improved corporate governance, better corporate security, improved employee loyalty and retention.

Improved customer relationships

Speed and accuracy have remained vital to maintaining customer relationships along with customers' loyalty. The Speed of execution is an alternate critical differentiating factor among contenders. All other things being equivalent, the organisation which can deliver quicker will win. Gebert et al. (2003) state that knowledge management focus on information is imparting, reuse and development can fundamentally decrease time to deliver an item or service to a client. Economist Intelligence Unit (2005) pointed out from its survey results that almost 65% business organisations believed that effective knowledge management has improved their customer relationships which have contributed substantially to the customer loyalty. Accenture (2011) revealed that organisations can optimise customer service through knowledge management by delivering fast and efficient services. Because knowledge management can only analyse the customers' needs and help management to achieve customers' satisfactions which ensure the sustainability of the business.

Better visibility of internal business processes and performance

Whelan and Carcary (2011) mentioned that strategies, instruments, layouts, procedures, and cases are the building pieces supporting reusable methodologies and techniques for an organisation and utilising these consistently make work more efficient, enhances quality and organisations can improve its visibilities by effective knowledge management. Economist Intelligence Unit (2005) revealed that almost 46% organisations believed that effective knowledge management improved the visibility of the internal business process and performance. According to the author Schiuma (2012) management of knowledge, is at the core of organisation's performance and business growth.

Allowing faster and better decision-making

Nicholas (2004) stated that knowledge management has huge positive impacts on the decision-making process. According to Lopez-Nicolas and Merono-Cerdan (2011), KM fosters innovation and performance which helps management to make a best possible decision. An effective KM system delivers its users appropriate information through collaboration, structure, syndication, varied experience, and practical lessons (Matheson, 1998). Economist Intelligence Unit (2005) found from their survey results that 45% of the organisations confirmed that making fast, and sounder decision-making is the top three benefits of good knowledge management.

Effective product and service development

In this globally competitive marketplace, innovative product and services are key to the business success, and this can be delivered by deploying knowledge management in an organisation. Ng, (2011) stated that knowledge management plays a crucial role in

product development mainly in the advancement towards knowledge-driven competition based on innovation and product quality. Liu et al. (2005) theorise that business firms with good knowledge management practices will have better encouraging new product development performance. Economist Intelligence Unit (2005) figured out that almost 41% organisations believed that good knowledge management practices help an organisation to deliver a unique product and services. Because of this advantage most of the companies like Apple introduced iTune University, and Motorola launched Motorola University in the process of developing their product and services.

Increase team performance

The authors Liebowitz (2012) stressed that KM should not be about just building portals and storing data, but enabling people and knowledge flow, especially those working in teams to perform at a higher level. The researchers further added that due to complexity in visualising the relationship between KM and the potential for higher team performance, organisation of all kind will often meet the information as the central object, which usually means a codified artefact, written down, stored, organised and then ultimately moved throughout the organisation deploying technology along with information systems. Staaats, et al., (2010) studied that overall usage of the knowledge and its effect on team performance and found that the productivity regarding saving time and money was higher for the teams that had access to the knowledge base. Indeed, knowledge management has become critical for the organisation with diverse workforce where more and more companies use virtual or ever-changing teams to tackle projects. Economist Intelligence Unit (2005) found out that approximately 31% organisations believed that good knowledge management can help smoother collaboration across teams and department.

Facilitating to find appropriate data and resources

Dalkir (2005) stressed that the knowledge management system provides information with appropriate raw-data and reference that support and precisely answer the questions being asked by the user, so they can perform their tasks efficiently.

Enabling re-use of information

Knowledge management system enables users to utilise information stored to address recurring needs. Re-use is good for the organisation as it saves time, reduces re-work, diminishes difficulties, and speed up the operation (Hokkanen, 2002).

Avoiding unnecessary work

Whelan and Carcary (2011) mentioned that knowledge management system helps people avoid doing the same thing over again. Consequently, it saves money and time, streamlines efforts, and keeps workers spirits up.

Preventing from making the same mistakes again

Lee and Ahn (2007) emphasised that knowledge management enables users to share lessons learned from failures and prevents making the same error again.

Providing benefit of existing know-how and experience

Lindner and Wald (2010) mentioned that in organisations, there are people with a wide variety of aptitudes and backgrounds. Users can take advantage of individual expertise and knowledge of each employee under an effective knowledge management system.

Imparting vital data broadly and rapidly

All employees need data to carry out their tasks adequately, yet they also experience the ill effects of data over-burden from an expanding variety of sources. KM assists address

this issue through customised portals, focused on memberships, and specific web indexes (Hokkanen, 2002).

Advancing standard, reusable methodologies and systems

Standard procedures and methods permits users to figure out how things are carried out, prompts unsurprising and top notch comes about and empowers large organisations to be steady in how the function is carried out (Whelan and Carcary, 2011). By giving a procedure to making, putting away, conveying, and utilising standard courses of action and methodology KM enables users to utilise them routinely.

Making rare capability generally accessible

In the event that there is a resource which is in extraordinary demand because of having an ability which is hard to come by, KM can help make that resource accessible to the whole organisation (Hokkanen, 2002). Methods for doing as such include group examination discussions, training programs, ask the master frameworks and web journals.

Demonstrating clients how information is utilised for their profit

In competitive circumstances, it is critical for an organisation to have the capacity to separate itself from other organisations. Showing to potential and current clients that it has a broad aptitude and has methods for bringing it to manage for their profit can help persuade them to begin or keep working with it (Dalkir, 2005). Alternately, inability to do as such could leave it powerless against contenders who can show their knowledge management capacities and benefits.

Fortifying innovation and progress

According to the authors like Lepez-Nicolas and Merono-Cerdan (2011) and Firestone and McElroy (2004), most organisations need to expand their incomes, yet it gets to be progressively troublesome as commercial enterprises mature and rivalry increases. Building up new knowledge through successful information imparting, coordinated effort and data conveyance can fortify innovation.

2.6 KNOWLEDGE MANAGEMENT AND HRM

Jing et al., (2012) studied Chinese firms and revealed a significant relationship between KM and HRM practices which can foster employee creativity and organisational innovation. According to Hislop (2013), the central business of the HR activity is to build up the staff as per the organisation's policy, choose and contract individuals, train and prepare the staff, assess employees' activity and performance, give rewards in recognition of their services, efforts, or achievements and build a culture of learning. These issues are discussed in the following, and their functions in upgrading KM are encompassed as well.

According to Edvardsson (2007) there are essentially two approaches to knowledge management. These approaches are "personalisation" and "codification". Explicit knowledge has a tendency to be put away in databases where it can be accessed and utilised promptly by anybody in the organisation. The codification of explicit knowledge is proper and objective and can be communicated in numbers, words, and particulars. It is therefore closely identified with exploitative learning, which has a tendency to refine existing abilities and technologies, compelling through institutionalisation and routinization, and is risk-averse (Dalkir, 2005). Firms invest

intensely in ICT for ventures like knowledge mapping (recognizing where the knowledge is to be found in the firm), information warehousing, electronic libraries, intranets and information mining. This builds viability, effectiveness and expansion.

Dialogs, learning histories and groups of practice are among the methods that must be utilised as a part of making implicit knowledge sharing easy. Implicit knowledge is essentially imparted through direct individual-to-individual contacts. Personalisation and exploratory learning are nearly connected, where exploratory learning is connected with innovation, multifaceted search, fundamental research, more loose controls and risk-taking. The pressure is on suppleness, adaptability, investment in learning and the production of new abilities (Dalkir, 2005). Personalisation alludes to the personal improvement of implicit knowledge that is based on experiences, instinct and individual aptitudes for tackling complex issues. It takes into account the rationale of "expert economics ", i.e. it is utilised principally to take care of unique issues, where rich, implicit individual knowledge is required, for example, in strategy consulting.

Hansen et al. (1999) argue that it is not knowledge in itself, but the way it is connected to tactical targets is the crucial element of competitiveness. They join both Knowledge Management and HRM to the spirited strategy of the organisation. This point focuses on the need for the best fit between HRM practices, for example, reward frameworks and an organisation’s way to oversee knowledge work.

The two knowledge management procedures require diverse motivation frameworks. In the codification model, leaders need to build up a framework that urges individuals to record what they know and to store those documents in a database. The level and nature of workers' commitments to the record information ought to be a piece of their yearly

performance evaluations. Leaders need to reward individuals for imparting knowledge straightforwardly to other individuals. At organisations that are taking the personalisation approach, incentives to rouse knowledge imparting ought to be altogether different.

There are no less than two systems for overseeing knowledge that have an effect on HR practices. We turn to selection and recruitment of employees in connection with knowledge management methods in the following section.

Selection and Recruitment

According to Hislop (2013), knowledge management is critical for job analysis, job design, job evaluation and person's grading which are keys in the recruitment and selection practices. Different studies highlight the significance of a fit between newcomers and the firm's culture of knowledge. They give emphasis to a fit between organisational culture and recruiting of appropriate personalities, and additionally the socialization of people into the culture of the organisation (Cable and Judge, 1997). (Kerrin and Currie, 2003) Where appraisal centres are practically focussed, they can reinforce the sub-cultures of functions and make knowledge imparting between functions extremely troublesome. Knowledge Management is regularly implemented by firms in intricate, unusual situations, changeable environments. Therefore customary selection and recruitment techniques usually have to be modified. In such case, it might essentially be so troublesome to identify necessary knowledge and skill ahead of time (Scarbrough, 2003). Customary recruitment and selection practices can obstruct knowledge imparting between groups or divisions in firms sorted out concurring the functional rule. Gloet and Berrell (2003) indicate that in organisations which embrace

the codification tactic the improvement of hi-tech solutions is persuaded, especially in psychometric testing and electronic recruitment.

Training and Development

Wilson (2014) stressed that continuous professional development mainly training and development is thought to be vital to expert and knowledge workers. According to Carlile (2002) keeping in mind the end goal to stay on the front line of their professional fields they must be continually mindful of improvements inside their particular disciplines and lines of work and them have to partake in activities that offer chances to press forward their own professional advancement (Robertson and O'Malley, 2000). Numerous analysts on KM take this for granted and don't dedicate substantial attention to it. On the other hand, the author Wilson (2014) and Gloet and Berrell (2003) contend, that organisations embracing codification methodologies have a tendency to contract students and train them in groups to be implementers, i.e. to stress knowledge gaining, manoeuvring, and storage, together with the attention to technology. Personalisation organisations contract graduates to be discoverers and originators, i.e. to utilise their methodical, expository, analytical and innovative abilities on special business issues, and to impart and spread knowledge. Once recruited, their most essential training originates from working with knowledgeable specialists who act as gurus. If we compare this with Firestone and McElroy (2004) hypothesis of single and double loop learning, then codification method concentrates on single loop learning. On the other hand, double loop learning is stressed in personalisation method.

Performance Management

Performance management recognizes who or what provides the crucial performance concerning the business policy, goals and destinations, and guarantees that performance

is effectively accomplished (Roberts, 2001). Performance management frameworks can hinder knowledge imparting, as a significant part of the contention between diverse functions can be because of the dissimilar objectives and targets set out for employees in the performance contracts.

Besides, the goals are often short-term and basically assessable in nature. On the other hand, focus on developing performance management in the long-run is found in numerous knowledge concentrated organisations (Currie and Kerrin, 2003; Swartz and Kinnie, 2003).

At last, Gloet and Berrell (2003) underscore that the KM methodologies see exertion, measurement and recompenses in a different way. Thus, inside the codification method, endeavours connected with frameworks and technologies are more prone to be identified and rewarded. Within such theory, key performance is identified with technology, innovative application and the volume of information. The personalisation model concentrates more on individuals, where key performance pointers are identified with individuals and implicit manifestations of knowledge and additionally the nature and quality of information.

Reward and recognition

Reward frameworks show what the organisation values and shapes people's conduct. Studies on knowledge specialists have observed that they have a tendency to have a high requirement for self-governance, critical drives for accomplishment, stronger individuality and alliance with a profession than an organisation, and a more noteworthy sense of self-direction. These attributes make them prone to oppose the dictatorial imposition of perspectives, standards, rules and structures (Despres and

Hiltrop, 1995; Herzberg, 1997; Horowitz et al., 2003). For that reason, combinations of rewards are required to inspire knowledge specialists. These include impartial pay structures, equity-based rewards, a range of worker benefits, flexibility over working time and additionally being given an acknowledgment for noteworthy work. For some knowledge specialists, it is as inspiring to have free time for working on knowledge-creating projects, attending conferences, as financial prizes (Lee and Ahn, 2007).

It has been noticed that Hansen et al. (1999) has contended that the two KM methods require different motivation and incentive frameworks. Moreover, it merits reviewing that Gloet and Berrell (2003) underscore that inside the codification strategy endeavours connected with frameworks and technology are more prone to be identified and rewarded, but the personalisation model concentrates more on individuals.

Career management

Currie and Kerrin (2003) saw in their research on a pharmaceutical organisation that through distinctive job positions during their training phase, by and large through their career, graduates and a few of senior employees developed a casual network of contacts that they placed confidence in and who believed them. This made the imparting of knowledge easy. Others have likewise noticed how career frameworks are significant in shaping the stream of employees in the long run and the way that this act together for obtaining and imparting knowledge (Evans 2003; Scarbrough 2003; Swart and Kinnie 2003).

Creating a learning environment

Evans (2003) emphasises the function of HR leaders in assisting their organisation to build up to an organisational culture that facilitates knowledge creation and imparting.

The actions required in such transformation procedure include: concurring tactical precedence and areas for change, facilitating demystify knowledge management by connecting knowledge management action to recognized business methodologies and HRM practices, and involving others in the knowledge management dialog. According to Argote (2012), mainly HR can play a vital role in an organisation by building up a knowledge consciousness program as a different improvement activity, ensuring the appropriate leadership and obtaining necessary developmental support. In particular, HR needs to create a culture which appreciates, encourages and supports learning from practices exercised on a routine or daily basis by providing necessary resources, facilities and spaces for learning, and by rewarding shares and learners.

2.7 A REVIEW OF KM FRAMEWORKS

Shongwe (2016) reviewed and analysed a number of the prominent KM frameworks. Shongwe (2016) noted that Huber's (1991) organisational learning framework was created to show how learning occurs through KM initiatives in organisations. Huber's (1991) framework has four KM processes that support learning. They are knowledge acquisition, knowledge distribution, knowledge interpretation, and organisational memory. Huber (1991) states that these main processes are made of sub-processes. This framework represents the various processes and sub-processes that enable an organisation to learn from KM initiatives.

Similarly, Wiig's (1993) framework is based on three pillars which are supported by a conceptual KM base. The base has four processes: knowledge creation, manifestation, use and transfer. The three pillars consist of different functional areas. The first pillar

has three functional areas: survey and categorise knowledge; analyse knowledge and related activities; and elicit, codify and organise knowledge. The second pillar has two: appraise and evaluate the value of knowledge and related actions. The third pillar has three: synthesise knowledge and related activities; handle, use and control knowledge; and leverage, distribute and automate knowledge (Wiig, 1993). According to Wiig (1993), the framework is based on the understanding of how knowledge is created, used, and manifested in people's minds and culture.

Meyer and Zack (1996) proposed an information processing platform for the manufacture of information products. The information processing platform acts both as an information repository and an information refinery for information processing. The refinery process is based on six information processing stages: information acquisition, refinement, storage/retrieval, distribution, and presentation/use. According to Mayer and Zack (1996), these processes are not executed sequentially as there may be feedback loops between them.

On the other hand, Skyrmer's (1998) framework describes technological tools that could be used to support different KM functions. These tools can support knowledge identification (e.g., knowledge discovery, and data-and text-mining tools), creation (thinking aids and conceptual mapping tools), collection/codification (intelligent agents), storage (knowledge databases), and diffusion/use (video conferencing, groupware, and decision support tools).

Bukowitz and Williams' (2000) KM processes framework follows two streams of activity that occur simultaneously in organisations: the day-to-day use of knowledge to respond to demands or opportunities from the marketplace; and the process of matching

intellectual capital to strategic requirements. They state that the framework presents a simplified way of thinking how organisations create, maintain and deploy knowledge to create value. It is divided into two broad processes: the tactical and the strategic. The tactical process is triggered by market-driven opportunity or demand, and the strategic process is triggered by shifts in the macro-environment. The tactical side spans four basic steps: get information, use it, learn from it, and contribute it. The strategic process spans three: assess information, build and sustain an information database, and divest the information. According to Bukowitz and Williams (2000), these processes ensure that organisations use their knowledge to respond to demands and opportunities from the market place.

Nonetheless, Alavi and Leidner's (2001) framework views the KM lifecycle from an information systems perspective. It explains the roles that are played by information systems in KM. It posits that information systems play four KM roles: knowledge creation, storage and retrieval, transfer, and application. They mention systems such as data warehousing to support knowledge creation; multimedia databases and query languages to store knowledge; lotus notes to support knowledge transfer; and decision support systems to support knowledge use.

Holsapple and Joshi (2002) created a knowledge episodes framework that identified a set of interrelated knowledge manipulation activities believed to be common in most organisations. They state that these episodes make us understand how knowledge is processed in organisations, and how it can change over time. The episodes highlight the major areas on which the chief knowledge officer must concentrate. The episodes are knowledge acquisition, selection, internalisation and use. The acquisition episode has its sub-processes, which are identification, capturing, organising, and transferring

knowledge. The selecting episode has the same sub-processes as the acquiring episode. The only difference is that the acquisition happens externally and selecting happens internally. The internalising episode has four sub-processes: assessing, targeting, structuring and delivering.

Birkinshaw and Sheehan (2002) created the four stage KM lifecycle framework after a five-year study with major multinational companies. The model aims to explain the lifecycle of an idea in a commercial setting. It shows that knowledge is born as something in a person's head, and that it takes shape once it is tested, matures as it is applied in real life settings, is diffused into a growing audience, and finally becomes accepted as common practice. There are four KM stages in the framework: knowledge creation, mobilisation, diffusion and commoditisation.

Lee and Hong (2002) categorised KM processes into four activities: knowledge capture, development, sharing and utilisation. Their framework explains information technologies that could be used to support such KM activities. They state that database systems, data warehouses and document management systems can be used for knowledge capture; data-mining and competitive intelligent systems are used for knowledge development; and networked technologies, such as the Internet (email, groupware, video conferencing, blogs, etc.), are used for knowledge transfer purposes. Multimedia technologies are assumed to play a vital role in the application of knowledge.

McElroy's (2003) framework posits that the KM lifecycle begins with the detection of a knowledge gap and ends with knowledge claims. In other words, people start with a knowledge gap realisation, and end up with solid (desired) knowledge. The lifecycle has

two activities: knowledge production and knowledge integration. Knowledge production has the following processes: individual and group learning, knowledge claim formulation, and information acquisition – which leads to a codified knowledge claim, which in turn leads to a knowledge claim evaluation. Knowledge integration processes are knowledge broadcasting, searching, teaching, and sharing. McElroy's framework assumes that KM seeks to produce knowledge and integrate it into the organisation.

Rollett (2003) adopted the process view of KM and created a framework with seven processes: knowledge planning, creation, integration, organisation, transfer, maintenance, and assessment. These processes are applicable when knowledge is used in organisations. According to Rollettt (2003), the KM processes optimise the way knowledge is used, and prove that knowledge is indeed used in these processes.

Beccerra-Fernandez et al. (2004) state that KM relies on four main processes and seven sub-processes. The processes and sub-processes are based on Nonaka's (1994), Grant's (1996a, 1996b), and Nahapiet and Ghoshal's (1998) theories. The four main processes are: knowledge discovery, which consists of two sub-processes, socialisation and combination; knowledge capture, which consists of externalisation and internalisation; knowledge sharing, which consists of socialisation and exchange; and knowledge application, which consists of direction and routines.

Heising (2009) analysed 160 frameworks from research and practice to create an integrated KM framework. Heisig (2009) focused on their processes to discover their differences and similarities. After a thorough synthesis of the frameworks, six frequently cited KM activities were then used to create a new framework. The activities are knowledge sharing, creation, use, storage, identification, and acquisition. According

to Heisig (2009), the classification of such processes helps to "overcome conceptual differences between different KM frameworks and serves as a basic common understanding".

Evans and Ali (2013) created the "identify, organise, store, apply, evaluate, and create" (IOSAEC) KM lifecycle framework. Just like many others, it was built from existing frameworks by synthesis and integrating KM processes. According to Evans and Ali (2013), the framework includes "second generation KM principles and a potential for double loop learning".

Building on the work of Evans and Ali (2013), Evans et al. (2015) proposed an integrated KM lifecycle framework. Just like Dalkir"s (2005, 2011) frameworks, theirs was distilled through the synthesis of other popular frameworks. The framework aimed to help improve how organisations conceptualise, strategise and manage their knowledge and knowledge assets. It has seven phases: identify, store, share, use, learn, improve, and create knowledge. They indicated that technology can be used at the different phases of the processes.

Shongwe (2016) concluded that the synthesis of the above analysed frameworks reveals that the number of processes (major and minor) varies significantly among the frameworks. For example, some have three, others have more. Additionally, the synonymous words/terms have been used in some processes to mean the same processes in different frameworks. For example, one framework mentions knowledge sharing, another knowledge transfer, and others dissemination. Moreover, in some frameworks, the processes follow a certain sequence, yet in others there is no sequence. For example, in one framework, knowledge creation is regarded as the first KM process, yet others

indicate that there is no sequence because of feedback loops. The KM process can start anywhere.

2.8 SUMMARY

This chapter has presented a thorough review of the literature on KM that relates to the current study's research objectives.

CHAPTER 3 : THE IMPACT OF KEY HUMAN RESOURCE ISSUES ON KNOWLEDGE MANAGEMENT

3.1 INTRODUCTION

Over the last decade, the Human Resource Management (HRM) researchers have shown continuous interests on the links of HRM to Knowledge Management (KM). In this knowledge based economy, the importance of Knowledge Management (KM) as part of Human Resource Management lies in creating competitive advantages, improving organizational effectiveness and revenue, and exploring opportunities to exploit them in the full swim as knowledge is progressively claimed to be a crucial factor in today's organizational perspective. KM is all about improving, sharing and applying the learned knowledge for the purpose of improving decision making, bringing innovation in product design, and most importantly improving the productivity and profit. Here, one question arises; How KM is linked to HRM? Scholars have recently argued that people are the cultivator of knowledge and HRM works with the people of the organization by issuing training and development programs, recruiting and selecting employees, managing performance and planning rewards and pay, and most importantly establishing a knowledge sharing culture within a firm that is most crucial for managing knowledge. So, there is a good interlink between HRM and KM. This paper will discuss the role of HRM in improving KM initiatives, traces out the critical HRM factors that promote knowledge management and the benefits of focusing on people issues and lastly challenges associated with managing HR for KM.

3.2 THE ROLE OF HRM IN IMPROVING KM INITIATIVES

Knowledge Management as a discipline integrates the approach to discover, capture, retrieve, split and evaluate a firm's information assets such as a database, crucial documents and procedures and policies (Jonsson and Tell, 2013; Algorta and Zeballos, 2011). The resource based view of management suggests firms need to integrate the unique, sustainable, and better-quality assets in order to build and sustain competitive advantages in the market (Edvardsson, 2008). Here, HRM of a firm can play a vital role in promoting KM initiatives in the firm's working environment. According to Lengnick-Hall and Lengnick-Hall (2006), for promoting the knowledge based culture in the organization, they need to emphasize on HRM practices that really aids in building and sustaining organization's knowledge based capabilities. Through KM, HRM can able to significantly embolden the role of their professionals. For improving the KM initiatives, the role of HRM is pivotal. Key HRM initiatives are training and development programs, performance management and knowledge sharing culture, and corporate education that have played a pivotal role in the establishment and development of knowledge intensive company (Jimenez-Jimenez and Sanz-Valle, 2013). The new roles of HRM in KM are Human Capital Steward, Relationship Builder, Knowledge Facilitator, and Rapid Deployment Specialists.

HRM helps the companies to communicative the rationale of the knowledge management. HRM also works a facilitator to make sure the alignment of the organization's vision, mission, objectives and goals, statement of ethics and policies (Currie and Kerrin, 2006). All of these must be directed toward building and sustaining a culture that embolden the sharing and using of knowledge with adequate understanding of competitive forces. HRM must build a culture in the organization

nourish people that are encouraged to share right information to the right employees' at the right time (Cabrera and Cabrera, 2005). HRM also build ultimate knowledge experience by renovating tacit knowledge to explicit knowledge by mans of training and educating in order to build skills and competencies. HRM is the discipline that integrates the knowledge sharing in the organization and it usage into the functions of the organization. In addition, HRM has the capability to transform low-tech knowledge to high-tech as a knowledge facilitator HRM must think much broader than the conventional practices and integrate creative integration into conventional HRM practices for the propose of better effectiveness (Currie and Kerrin, 2006).

HRM influence on knowledge management initiatives

Researchers reason that HRM plays pivotal influence on knowledge management initiatives (Edvardsson, 2008; Jimenez-Jimenez and Sanz-Valle, 2013; and Chen and Huang, 2009). Key HRM practices such as training and development programs, performance management and knowledge sharing culture, and corporate education that have played pivotal influence on the development of knowledge management practices in the organization. Some new roles of HRM that have influence on knowledge management are Human Capital Steward, Relationship Builder, Knowledge Facilitator, and Rapid Deployment Specialists (Algorta and Zeballos, 2011). In the following section, two out of them are discussed:

The knowledge provider

HRM acts as a knowledge provider in promoting knowledge management initiatives through facilitating the procurement of the essential knowledge and skills by arranging variety of training and skill development programs. The role of knowledge facilitator is very much effective in case of influencing the knowledge management initiatives

(Algorta and Zeballos, 2011; Blome, et al, 2014). HRM as knowledge provider focuses on learning and development through training and development programs, the effective management of knowledge through strategic knowledge management, and building a work environment that really facilitates the process of knowledge sharing, creation and dissemination.

The knowledge seeker

HRM also acts as a knowledge seeker in the knowledge management initiatives through searching creative and innovation oriented people inside the organization by performance management or performance appraisal system (Hargis and Bradley, 2011). In addition, HRM emphasize on building and sustaining networks and communities of practices through connecting people from diverse departments and supply chain. From this practice, HRM seeks to identify the key people who are knowledgeable and creative and who have the ability to solve the unique business problems and design creative and innovative ideas to gain competitive advantages in the market. Through these practices, HRM identify the knowledge and use them in line with the business strategies to make return out of knowledge management (Kogut and Zander, 2008).

The importance of knowledge sharing

According to Noorderhaven and Harzing (2009) Knowledge sharing can be defined as a voluntary act the systematic exchange of skills, information and expertise among people of an organization in such a way that it can be utilized by them. Knowledge sharing is playing key role in building a knowledge based culture within an organization that will really differentiate them from others and gain and build sustainable competitive advantages (Agarwala, 2006). Knowledge sharing acts as a practical way to get unique and effective solution to major business problems such as product strategies, sales

strategies and finding out new product development concept (Cabrera and Cabrera, 2005; Blome, et al, 2014). It also allows amalgamating the previously unknown views, facts, ideas and information which helps people within an organization to create a new basis for new knowledge for innovation. Therefore, it improves the organizations capability to innovate in terms of products, services, branding, image, and channel and customer relationship. So, there is a good interlinked between innovation and knowledge sharing that really make sense for an organization (Bratton and Gold, 2010).

3.3 CRITICAL HRM FACTORS THAT PROMOTE KM

The growing importance of KM in this knowledge based and competitive market structure emboldens HRM to critically involve in building and sustaining a knowledge management system in today's organization (Fombrun, et al. 2008). HRM has the ability to create, manage and reinforce knowledge management in organization through following initiatives:

Reward and Recognition

The trend of recognizing the employees' performance in terms of rewards means that organization really values and cares about the employees' behaviour in the workplace. Studies found that knowledge workers are likely to have high need for autonomy, considerable drives for achieving something extra, stronger affiliation and identity with the profession rather than company, and tremendous team building capacity and self direction (Bratton and Gold, 2000). These particular natures make them to be authoritarian views of organizational rules and structure. So, in order to embolden the spirit of these knowledge workers attractive rewards for their performance as recognition are needed such as attractive compensation package for them, profit sharing rewards, variety of additional employee benefits, giving flexibility in working hours and

place, and recognizing their brilliant pieces of work. HRM can easily do these and give knowledge workers free time to accomplish the knowledge building projects, giving them permission to attend conferences, and allow them to spend more time on interesting and innovative projects as rewards to motivate them (DeCenzo, 2008).

Training and skills development

Especially for the knowledge workers continuous professional development is so effective and essential also. For the purpose of staying at the top of the field of profession knowledge workers must be constantly conscious of the developments within their particular sector and professions. It is also essential for them to participate in the activities that have the chance to further develop their professional field (Fombrun, et al. 2008). Firms adapting knowledge management style tends to hire people with knowledge seeking interests and skills and train them in groups to be strategist and implementers, to be perfectionist in the area of knowledge management in terms of knowledge acquisition, storage and manipulation with especial focus on technology. Firms that are considered as knowledge based firms hire people to be inventors for the purpose of using the creative and analytical skills to solve business problems and to share their knowledge with other people within the organization (Meijerink, et al. 2013); (Minbaeva, 2012).. HRM works on designing and arranging training and development programs to give the current employees and new comers training in order to develop their skills and qualities that fit with their organizations culture (Hargis & Bradley, 2011). In knowledge based organization, working with the expert consultants who are acting as mentors is considered as most important and effective training. Therefore, training and skill development programs arranged by HRM really promote knowledge management in the organization.

Employees' performance appraisal

One of the other factors through which HRM promotes KM is that performance management and appraisal. Performance management seeks to identify the people who deliver the absolute performance with regard to business strategy and objectives. Performance appraisals really motivate people inside the organizations and embolden them to be knowledge seeker. HRM of knowledge intensive companies motivate employees by appraising their performance and problem solving performance, hence the productivity of the employees will significantly increased and devote them to bringing output through knowledge sharing culture (Paauwe, 2009). But sometimes performance management system can hinder building knowledge sharing culture within organization as conflict between the various functions can arises because of the divergent objective set for diverse employees in performance agreements. Therefore, HRM must keep this fact in mind while designing performance management strategy to create a knowledge based culture in the organization (Minbaeva, 2012). In addition HRM adapts techniques and tools to motivate employees to be knowledge oriented employees to solve unique business problems and spread innovation around the organization through proper performance management system and nurturing them in knowledge sharing, caring and doing culture (Scarbrough, 2007). .

Employee Retention

Employee retention signifies persuading and attracting employees' to retain them for a long time for the development of the organization. In this case, HRM as an organizational department takes initiatives and plans to retain their loyal and committed employees with the organizations (Schuler & Jackson, 2007). HRM of knowledge intensive companies practices a system of reward and recognition and training and skill development programs in order to reinforce the culture of knowledge sharing,

documenting knowledge and leverage and reuse the knowledge resources to gain the goal of the companies. They do these things as retaining a skilled and knowledgeable employee is five times less costly than attracting a new employee. So, retaining employees saves significant effort, time and money of the company (Wylie, et al. 2014).

The benefits of focusing on people issues in KM

The main central issues of knowledge management are people and learning (Shultze & Stabell, 2004). Knowledge management supports that technology is inferior to human element as humans are the source of tacit knowledge. Without people how the knowledge will be nurture is the main fact in knowledge management. In this perspective, knowledge management is actually liable to focus on people issues (Scarbrough, 2007). There are some key explanation for why knowledge management should focus on people issues, these are:

Knowledge management needs unique solutions of both people and technology

It is not possible anyway to build a knowledge intensive company without people and technology. But it acknowledged by the KM that technology is secondary to human element as humans are the source of tacit knowledge (Simonin & Ozsomer, 2009). Effective use of people and technology is needed to build a knowledge based company where people are motivated to share, accumulate, document and manipulate the knowledge with each other. Technology is used in order to amalgamate, analyse and disseminate structured knowledge that is volatile and people are also used in order to understand the captured knowledge, construe it, and capture various unstructured data and analyze it. Therefore, for better effectiveness of knowledge management people issues is a vital matter.

Knowledge management needs

The effective management of knowledge requires an experienced group of people who are accountable for managing it, along with this knowledge have to be delegated and controlled by knowledge managers. The main responsibilities of these people or knowledge managers are to gather and categories knowledge, build a knowledge intensive technology infrastructure and constantly monitor the use if the gathered knowledge (Wylie, et al. 2014). Therefore, we also see that people such as knowledge manager is a vital issue.

From the above discussion, we can easily say that without considering the people issues no company can build and sustain a knowledge intensive or knowledge sharing culture. Therefore, every knowledge intensive company seeks to emphasize on people issues in regards to build a knowledge sharing culture in the organization (Paulin & Suneson, 2012).

Benefits of focusing people issue in KM

Many researchers argued that there are certain benefits of focusing or emphasizing huge on people issues in knowledge management. These benefits are:

Developing and sharing best practices

For the purpose of developing and sharing best practices out of knowledge management, people are playing pivotal role. Unless knowledge is to be delegated and controlled by some expert managers, it is impossible to build a knowledge sharing culture in an organization (Simonin & Ozsomer, 2009). But, knowledge managers are the people who make it possible to develop and share the best practices of knowledge

management around the organization and build a knowledge intensive culture that motivates employee creativity and innovation and leverage and use the current knowledge resources so that organization will get best out of it (Oltra, 2005).

Managing organizational knowledge resources in effective way

In order to manage the existing knowledge of the organization, people issue must be considered as a vital one. Mangers with adequate expertise can bring best out of the organization's current knowledge resources through applying different tools and techniques in consolidate manner (Noorderhaven & Harzing, 2009). Many researchers argued that people resources of the organization are the key resources that make it possible to manage the current knowledge effectively and used it in systematic way to bring positive outcomes for the organization (Minbaeva, 2012).

Faster imitation of innovations through faster movement of knowledge through the organization

People are the resources of the organization who make the faster replication of the innovation through using best use of knowledge resources of the organization (Mondy, et al. 2007). Therefore, focusing on people issue helps organization to faster imitation of innovations through faster movement knowledge around the organization (Ghobadi & D'Ambra, 2012).

Building collaborative teams, capturing and sharing knowledge and delivering business excellence

Focusing people issue helps organization to build collaborative teams who amalgamate the knowledge resources in order bring best out of it (Minbaeva, 2005). In addition, it also helps in creating a knowledge culture where people of the organization can capture

and share among them and bring business excellence through innovation and creativity (Meijerink, et al. 2013).

Improve and accelerate learning

Focusing people issues can improve and accelerate the learning process of the organization. Then learned knowledge can be applied in accelerating the wheel of the business though innovation and creativity. In addition, learned employees' can able to make faster replication of innovation and thus organization gains sustainable competitive advantages over it (Krogh, et al. 2010).

3.4 CHALLENGES ASSOCIATED WITH MANAGING HR FOR KM

In today's hyper competitive marketplace, it is really challenging to practice HRM for knowledge management as it throws some very influential challenges towards organization which is the negative aspect of building and managing a knowledge sharing culture within an organization (Holzmann, 2013); (Kalling & Styhre, 2006). Many researchers argued that when people are very familiar with the knowledge management and applied it quite effectively then they demands autonomy which really not a good aspect of managing an organization (Foss, et al. 2009); (Fombrun, et al. 2008); (Campbell, et al. 2012). In addition, sometimes it will be difficult for the organization to retain them with the company for long time as they have huge demand in the market.

Retention of skilled workers

Researchers believe that knowledge management really benefit organization, but once knowledge management system is created the skilled workers demand autonomy and

try to move to other companies for better career (Campbell, et al. 2012). So, it is a challenge for knowledge intensive firm to practice knowledge management and make people filled with the current knowledge of the organization.

Recruiting candidate with right skills and attitude

Knowledge intensive firm requires right candidates with right skills and attitude as knowledge management demands more than traditional view of accomplishing goals (Casimir, et al. 2012). But sometimes it may be difficult for the firm to recruit and select right candidates with learned knowledge. In addition, frequent recruitment and selection requires huge cost and that is really hurts the revenue of the fir (Bryant & Terborg, 2008).

Appropriate remuneration system:

Candidates with right skills and attitude demands high remuneration that needs some firms to change their remuneration structure and high remuneration is sometimes a challenge for the organization. Making a appropriate remuneration system that really fit with the demands of the expectation creates some dilemma as to after sometimes whether the employees' will again raise their voice to increase the remuneration and many more.

Appraising employees' participation in knowledge sharing:

Once knowledge sharing culture is established then organization needs to appreciate the participation of the employees in sharing knowledge. It motivates them to participate once more and contribute from the core. But sometimes employees are not satisfied with the system of appraising of the organization as they want different way of

appraising them. It will create conflict between HRM's approach and employees' expectation.

3.5 A FRAMEWORK FOR HRM'S CONTRIBUTION TO KNOWLEDGE SHARING

A very useful framework for showing the HRM's contribution to knowledge sharing is The Weaver's Loom Framework (Meijerink, et al. 2013). There are two vital facets of this framework. One key facet of this framework emphasizes on the strategic incorporation of the major components of the continuous improvement and HRM. Both strategic continuous development and HRM has a common symbolic relationship that is each supporting jointly achieving organization goals. Another vital facet of this useful framework emphasizes incorporation of major components of knowledge management and HRM (Boselie, 2010); (Minbaeva, 2005). Both two facets utilize the Weaver's Loom Framework for strategically incorporating major elements of continuous development and knowledge management into the HRM practices in order to build transformational HRM environment. This incorporation of the knowledge management, continuous improvement with HRM practices of the company leads to a strong organizational structure, but will bring significant organizational change for the long term. And finally this integration contributes to HRM practices to be more transformational rather than transactional (Minbaeva, 2012).

Contrasting Traditional HRM with Transformational HRM

The accountant's view of employee where profit is the main goal, focus on counting heads and overseeing pays and maintaining records is known as transactional or traditional view of HRM whereas Transformational HRM is systematic HRM practices

and policies that are cautiously managed and designed that attract, improve, embolden and retain employees so that effective functioning of the organizational procedures is ensured (Schuler & Jackson, 2007). Moreover, transformational HRM is far broader view of HRM that counts the long term well being of the organization than traditional HRM practices of the organization. Transformational HRM focus not only on day to day as usual HR function it incorporates these day to day functions with the strategic goals and objectives of the organization for the purpose of meeting the organizational goals in efficient way (Fombrun, et al. 2008); (Edvardsson, 2008).

Integration of knowledge management

Knowledge management is a systematic way of incorporating organizations current level of knowledge resources and leverages and use them in full swim for the purpose of accomplishing the necessary business functions such as making decisions, solving problems, and strategic planning (Algorta & Zeballos, 2011). Actually knowledge management signifies the trend of the organization to share the knowledge through a systematic process of development and continuous improvement. Some scholars reason that the main theme of the knowledge management is to transform the tacit knowledge to explicit knowledge and codified it, stored it, and disseminate it for the utilization of the organizational improvements (Wiig, 2013). Knowledge management aids an organization in attaining its strategic goals and also paves the way to manage the valuable intellectual capital which actually represents the collective knowledge level of an organization.

Knowledge sharing and its incorporation into HRM practices

One useful way to trace the tacit knowledge of the employees through knowledge sharing process that signifies the way of sharing knowledge with other members of the

organization or making the knowledge available to other in an organizational boundary. Many researchers argued that when an employee leaves the organization they move with their tacit knowledge (Wijk, et al. 2008); (Kalling & Styhre, 2006); (Ghobadi & D'Ambra, 2012). The probable loss of tacit knowledge turns organizations to tap into the tacit knowledge and transform them into explicit knowledge that is shared within the organization instead of losing them. Knowledge sharing requires HRM practice beyond traditional one. HRM practitioners must work in strategic way in every single aspect of the business operations so that it will promote knowledge sharing. For example, instead of very prearranged jobs with highly clear responsibilities if works can be designed in a manner that breaks the works into assignments and requiring employees to accomplish the work interactively with other employees in different groups within the organization. This will promote the cross functional linkage among the employees and brings better output.

The Weaver's Loom: A Conceptual Framework

The Weaver's Loom Framework is very useful in explaining the association between the HRM and strategic goals of an organization. Just like Weaver actions of arranging the vertical fibers' on a loom, organization must have to strongly anchor its strategic goals to a framework of transformational HRM (Meijerink, et al. 2013).

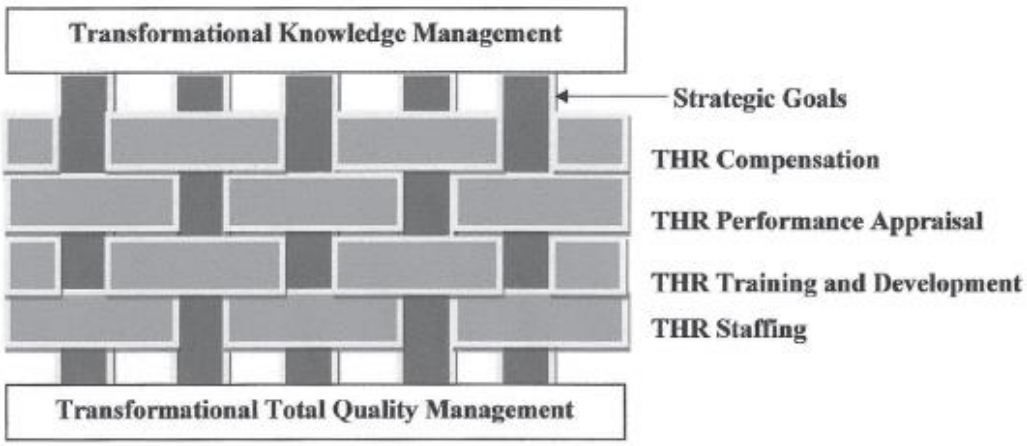

Figure 3.1: The Weaver's Loom Framework

Source: Meijerink, et al. (2013)

The Figure 3.1 shows that the strategic incorporation of the knowledge management works as a frames of loom, representing strategic goals. The looms frame, the fibers are anchored upright maintaining a spaced position. The interweaving of the key elements of the transformational HRM- staffing, training and development, performance appraisal and compensation-cannot haul the strategic goals out of line. The horizontal fibers show the elements of Knowledge management that are incorporated with the transformational HRM elements such that every policies, strategy and decision of HRM support achieving organizational goals.

3.6 SUMMARY

Knowledge management is a systematic way of incorporating organizations current level of knowledge resources and leverages and use them in full swim for the purpose of accomplishing the necessary business functions such as making decisions, solving problems, and strategic planning (Algorta & Zeballos, 2011). Whereas Human Resource Management is the art of managing the firm's workforce by taking initiatives

like training and development, recruitment and selection of new employees, rewards and compensation, performance management, and many more in order to achieve the strategic goals of the organization (Mondy, et al. 2007). The impact of key HRM issues on knowledge management is huge in recent days where knowledge management is considered as a source of competitive advantage and way of improving organizational performance through innovation and creativity. For improving the KM initiatives, the role of HRM is pivotal. Key HRM initiatives are training and development programs, performance management and knowledge sharing culture, and corporate education that have played pivotal role in the establishment and development of knowledge intensive company. The new roles of HRM in KM are Human Capital Steward, Relationship Builder, Knowledge Facilitator, and Rapid Deployment Specialists (Algorta & Zeballos, 2011). An important facet of knowledge management is knowledge sharing which is very crucial in today's hyper competitive market. Knowledge sharing acts as a practical way to get unique and effective solution to major business problems such as product strategies, sales strategies and finding out new product development concept (Lengnick-Hall & Lengnickel-Hall, 2006); (Krogh, et al. 2010). It also allows amalgamating the previously unknown views, facts, ideas and information which helps people within an organization to create a new basis for new knowledge for innovation. In addition, HRM has the ability to create, manage and reinforce knowledge management in organization through factors like training and development, recruitment and selection of new employees, rewards and compensation, performance management (Holzmann, 2013). The incorporation of the key elements knowledge management with these HRM initiatives builds a transformational HRM system that aligns all necessary functions of HRM with strategic goals of the organization. Moreover, Knowledge management focuses on people issues as there are certain benefits like a faster imitation of innovations through faster movement of knowledge through the organization, managing

organizational knowledge resources in an effective way, developing and sharing best practices, building collaborative teams, capturing and sharing knowledge and delivering business excellence and improve and accelerate learning. Though aligning HRM initiatives with knowledge management is very effective in achieving strategic goals of the organization and gain competitive advantage in the market, there are some very notable challenges arises from practicing HRM initiatives along with knowledge management such as retention of skilled workers, recruiting candidate with right skills and attitude, appropriate remuneration system and appraising employees participation in knowledge sharing (Foss, et al. 2009; Campbell, et al. 2012). In order to overcome these challenges to effective use of knowledge, HR professional must strategic in incorporating and practicing HR practices. A very useful framework for showing the HRM's contribution to knowledge sharing is The Weaver's Loom Framework. There are two vital facets of this framework. One key facet of this framework emphasizes on the strategic incorporation of the major components of the continuous improvement and HRM. Another vital facet of this useful framework emphasizes incorporation of major components of knowledge management and HRM. Both two facets utilize the Weaver's Loom Framework for strategically incorporating major elements of continuous development and knowledge management into the HRM practices in order to build transformational HRM environment. This incorporation of the knowledge management, continuous improvement with HRM practices of the company leads to a strong organizational structure, but will bring significant organizational change for the long term (Benson and Brown, 2007).

Empirical results are discussed in chapter 5, 6, 7, 8, 9, and 10. The next chapter discusses the research methodology adopted for this study.

CHAPTER 4 : RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter discusses the method used in the data collection and analysis to answer the primary research questions of the study. It clarifies the research design, sampling and data collection and methods used and describe the analysation of the collected data. The research design covered on qualitative data collection and analysis method. The views of the professionals working in the KSA construction industry were explored. The qualitative approach allows investigating experience, feelings and behaviour of the individual involved to understand the reason behind it.

4.2 METHODOLOGICAL FRAMEWORK

Research is described by Greenfield (2002) as "an art aided by skills of inquiry, experimental design, data collection, measurement and analysis, by interpretation, and by presentation" in order to acquire new knowledge and understanding. It is undertaken with the sole purpose of finding thinks in a systematic, logical and organised way as to increase knowledge about a particular topic (Kumar, 2014; Saunders, 2009; Crookes and Davies, 1998). To acquire the information that aids in the development of knowledge, a variety of methods have been generated. Research methods are considered as the channel and procedures for the collection and analysis of information.

In the context of this research, ontology determines how the researcher perception on the implementation of KM strategies within the KSA construction organisations. On the

other hand; epistemology examines the relationship between knowledge and the discovery during the research process. The context of study explores how the KSA construction organisations are embedding KM strategies for competitive advantage. Killan (2013) stated that a person's ontological belief will dictate how unbiased the relationship between the researcher and what can be known is. The exiting literature and the interview responses to be compare and to be identify the relationship on the real world perception based on experts' opinions. Research methodology is the process of gathering data for the purpose of making business decisions.

The methodology includes the existing publication research, interviews, surveys and other research techniques, and could include both present and historical information. According to Kumar (2008), research methodology is a systematic way of solving research problems. Literature reviews have shown extensive existing research studies and indicated there was a need for empirical research to be conducted to ascertain the implementation of KM strategies within the KSA construction organisations. A systematic review of literature was conducted explore key drivers, strategies, challenges and benefits of implementing KM within the KSA construction industry. To evaluate the gap, comparative study of implementation of KM strategies around the world and in the KSA was carried out.

4.3 RESEARCH PHILOSOPHY

In this study, the research investigates on the nature science. The chosen research philosophy is realism. Realism emphasises that the world is actual and external and knowledge only can progress through observation that have straight communication to the phenomenon being investigated (Smith et al, 2012). In this context to provide a clear

and precise analysis of the KM strategies adopted in the KSA construction organisations, the field data collection from the professionals in construction organisations is vital. This will provide different points of view between the law of the nature and knowledge edge based on real world experience. Gathering information through extensive literatures creates an abstract reality. However, in the terms of realism philosophy, this interrelated perception can be examined through real world investigation. For example, Gummesson (2002) stated that a realism researcher interpret "object" that interact as "buyer" and "seller". The real decisions are made in the world outside.

4.4 RESEARCH APPROACH

There are two different approaches of establishing what is correct or wrong and methods of outlining conclusions. These methods are induction and deduction. Induction is based on empirical proof whereas deduction is based on logic (Ghauri and Grønhaug, 2010). The researcher builds theories from existing information, which can be verified trough empirical studies and be acknowledge or rejected. Normally this kind of research is accompanying by quantitative research (Ghauri and Grønhaug, 2010). A deductive method is concerned with identifying a hypothesis (or theories) regarding existing theory and then planning a research approach to testing the theory (Wilson, 2010).

It has been expressed that deductive means reasoning from the precise to the general. In the event that a causal relationship or connection appears to be understood by a specific hypothesis or case illustration, it may be realistic most of the time. A deductive

configuration may test to check whether this relationship or connection did acquire on more general conditions (Gulati, 2009).

Snieder and Larner (2009) notify that in deductive methodology thinking begins with a hypothesis and leads to a new theory, which is going to be acknowledged or rejected due to the research: Likewise, deductive reasoning could be clarified as thinking from the general to the specific Pelissier, (2008), though inductive reasoning is the opposite. As such, deductive methodology includes formulation of theories and their subjection to testing throughout the research technique, while inductive studies do not deal with theories in any ways.

This research was adopted by inductive reasoning as the research focusing on what happens in terms of KM strategies that have been implemented in the KSA construction organisations. The primary purpose of inductive reasoning is to allow findings a development from frequently or significant interrelation with the raw data. This approach examines view of human behaviour to achieve the objective on discovery. As stated in Thomas (2006) the process of inductive coding begins with understanding the text and concludes in several meaning that are essential in the text. Since this research mainly examine on view on individuals, they may express the same meaning but in a different word. Inductive approaches are commonly connected with qualitative research (Gabriel, 2013). By adopting the inductive reasoning; data collection technique (interviews) will be more realistic as it's collected from real world environment. Inductive approach most likely to concern about the context and small number sample is appropriate for in data collection method (Sauders et al, 2016 p .147).

4.5 RESEARCH STRATEGIES

Once the relevant material was gathered and determining the emphasis on the study, designing a suitable research strategy was taken place to examine the main objective. There are three available research strategies which are qualitative, quantitative and mixed method (Saunders et al, 2016 p.164). Sutton and Austin (2015) stated that qualitative study define as seeking to deliver on why individuals have thought and feeling which might affect their behaviour. Meanwhile, the quantitative research is means analysing objective theories by exploring the relationship between variable and numbers. Additionally, mixed method research is an approach where the combination of both qualitative and quantitative methods (CIRT, 2018).

The data for the study were collected using qualitative methods, which are concerned with understanding individuals' perception of the world they live in (Bell, 1993). Caley et al. (1992) state that qualitative methods are designed to discover what happens in 'real life' – the complex configuration of action and belief. Therefore, this research adopted qualitative approach for the following two reasons. Firstly, qualitative approaches are well placed to uncover the focus of the present study, namely how KSA construction organisations are embedding KM strategies for the competitive advantage. Secondly, because there is a little prior research on embedding KM for competitive advantage in the KSA construction organisations.

4.6 QUALITATIVE RESEARCH METHOD

Qualitative research is "an authority term covering an array of informative techniques which seek to describe, decode, translate or when come to relations with the meaning,

of certain more or less certainly arising phenomena in the social world" (Van Maanen, 1979,) which give rise to "detailed descriptions of events, conditions, and interactions between people and things providing depth and detail" (Patton, 1990). It is also subjective (Morgan, 1980), and generally related to a particular temporal and spatial domain (Van Maanen, 1979). The appropriateness of this approach to research is dependent on "the nature of the social phenomena to be explored" (Morgan and Smircich, 1980).

4.7 DATA COLLECTION

Data collection is a necessary to gather and measure information enable to give an answer to appropriate question and appraise the outcome. Research is conducted in order to investigate a problem and data collection technique is useful is gathering accurate information and to evaluate them. Semi-structured interviews were chosen as the data collection method because they have the potential to generate rich data to explore a range of perspectives and develop a holistic viewpoint (Cassell and Symon, 1994, Kvale, 1983, Kvale, 1996). Interviews were recorded and transcribed. Interviews covered topics such as details of the business; key drivers for implementing KM strategies; key KM strategies implemented; key challenges for implementing KM strategies, KM strategies impact on competiveness; and currently available and future training strategies related to KM in the KSA construction organisations.

4.8 SAMPLING

Sampling is the process in which a pre-determined number of observations are selected from a larger population. Sampling is of critical importance in research, as in most cases

there is a larger population that due to numerous restrictions sampling is the only viable option in obtaining reliable responses that represent the views of the wider population. Sampling methods include probability and non-probability-based samples and in each category there are a number of techniques in order to select the most suitable sample in the context of the given research (Wilson, 2011; Bryman and Bell, 2011; Saunders et al, 2012; Bryman, 2012).

Fellows and Liu (2015) explains that the objective of sampling is to provide an appropriate representation of the population whilst ensuring the data collection methods and the processing components. In order to validate the representativeness of the sampling, statistical theory is implemented. In addition, it must be considered two typical errors in sampling which are the miscalculation of the sample size and the selection of biased groups.

Kumar (2014) explains that the assessment of a sample in a qualitative research is not predetermined, and that the data gathering stops when data saturation is achieved. This happens when the new information is not adding different attributes to the sample or this new information is insignificant. Sampling that does not involve probability are more suitable for qualitative sampling, which include the purposive, expert, accidental, judgemental and snowball sampling (Kumar, 2014). On the other hand, Ponto (2015) adds that this sample must include individuals that can represent the attributes and distribution of the entire population (Ponto, 2015).

The sampling method used in this study was purposive or non-probability sampling, whereby the subjective judgements of the researcher are used in selecting the sample (Remenyi et al., 1998). Furthermore, a purposive sampling technique involves drawing

samples that are both easily accessible and willing to participate in a study (Tashakkori and Teddlie, 2010). According to O'Leary (2004) non-probability sampling methods are used when there is need to answer the "how" and "why" questions. Therefore, a purposive sampling technique was used in order to achieve representativeness.

A total of 50 top construction organisations in KSA were contacted of which 30 organisations agreed to participate in this study. Firstly, the organisations were sent the invitation letter which stated about the research, ethical aspects of conducting interviews and the benefits of participating (i.e. sharing the summary of the results). Within the 30 organisations, the sample included directors, advisers and managers responsible for KM implementation in their respective organisations, as presented in Table 4.1. The participants were grouped by their job title: directors, advisors and managers. All the interviewees have considerable experience in the KSA construction sector; in particular they had relevant experience on knowledge management issues, with some of them having 'knowledge management' in their job titles.

Table 4.1: A break-down of professionals who were interviewed for the study

Responsibility of interviewee in the organization	No. of Interviews
Directors	
• Project directors	4
• Associate director	3
• Director of supply chain	4
• Procurement director	2
• Operations director	2
• Human resources director	3
Advisors	
• Construction project advisor	4
• Knowledge management adviser	3
• Quality, Health, Safety and Environmental advisor	2
Managers	
• Senior Human Resources Manager	2
• Construction Manager	3
• 19Human resources manager	4
• Operations Manager	3
• Building Information Manager	2
• Knowledge management manager	3
• Construction supply chain manager	2
Total	**46**

4.9 DATA SATURATION

An important sample size issue in qualitative research involves saturation of information (Strauss and Corbin, 1998). Mason (2010) analyses qualitative studies from PhD thesis and explains that such studies may have between four and eighty-seven interviews, with a mean value of twenty five. Creswell and Poth (2017) recommend twenty to sixty interviews for a study of this kind. The sample size of this study was based on the principles for data saturation theory explained by Francis et al. (2010).

Saturation is a term used to describe the point when no new insights or range of ideas are generated through adding more data. In this study, data were collected until no new aspects of the KM related training strategies were revealed. In this study, actual saturation of data occurred before the 43 interview. Therefore, to ensure greater dependability and transferability (Creswell, 2014), a total of 46 professionals from 30 KSA construction organisations were interviewed.

The interview defined as conversation between interviewee and the researcher. According to Gray (2004), interview is the most rational method of research. It is largely explore and articulate the perception, feelings and understanding. As Cohen and Manion (1997) highlighted that interview benefits number of different purposes such as gathering information about a person's knowledge and experience and used to test out a hypothesis and their relationship.

According to Bernard (1998) a semi structured interview question best used when only one chance to interview the interviewee. The semi structured interview question will assist to provide a reliable set of qualitative data. It also provides understanding in developing topic of interest that may abandon from the interview and develop a relevant and properly structured interview question. Generally, semi structured interview will be taped and transcript for analysis. This interview question can be prepared ahead of time and allows have a proper preparation before the interview take place. Semi structured interview also allows the interviewee freedom to express their opinions with their own terms.

Since the method of examining the outcomes contains qualitative, the analysis of the data contains text show feeling or expression and experience of smart city experts and

providers in the field. The qualitative method was decided because the research will employ robust analysis Tariq and Woodman, (2013) that includes words, pictures and narrative which the data collected is more comprehensive. Saunders *et al* (2016 p.394) stated that the data to be used to answer a broad range of research question as using qualitative approach.

In this study, the interviews lasted between 30 and 90 minutes. The format of these interviews was face-to-face, and the transcripts were recorded and supplemented with field notes as appropriate. These interviews were recorded with permission and supplemented with field notes. During interviews, visible evidence of KM activities in the interviewed organisations (e.g. posters, awards) was also noted.

Full, verbatim transcripts were produced to ensure nothing was omitted based on subjective filtering by the researcher. Audio tapes were frequently replayed to pick up additional data from voice inflection and demeanour, laughter and joviality, and other nuanced behaviour otherwise lost during transcription.

4.10 DATA MANAGEMENT

Blismas and Dainty (2003) made a number of significant points with regards to the use of software packages for data management which are acknowledged: the restriction of the study imposed by a software; importance of understanding how the software package operates and what the weaknesses are so these can be addressed; to remember that the computer is only to aid the process; advantage of a software package is that all

the data is contained ‘within a single analytical environment’; a lot of work is required on the part of the researcher despite use of a software package; and importance of making any prejudices of the researcher apparent in the research explanation.

Furthermore, in a comprehensive assessment by Morison and Moir (1998) on the pros and cons of using software for coding, limitations seemed to outweigh benefits. When purported efficiency of data management and retrieval capabilities were weighed against the potential loss of ‘familiarity with the data engendered through repeated handling, reading and re-reading that is part of the analytical process itself distancing researcher from the data through mediation of computer software’. Therefore, it was decided that a better approach was to use paper, pen and the capabilities of Microsoft Word.

4.11 ETHICAL ISSUES

Since the nature of qualitative data is based on interaction between researcher and the participants, it can be challenging throughout the different stages of study. By considering qualitative data collection in a research there are some ethical challenges to be taken into account. Qualitative data collected can be described as interpretive research where this method investigating *why* and *how* of a human being and the findings may be controversial if the interpretation is incorrect and bias. Therefore, ethical guidelines was been implemented in order to deal with ethical challenges of qualitative studies. The first stage is the ethical form submission to get approval from the University of Wolverhampton for this research. As far of the ethical form concern, it has been approved to proceed to the next level of the research study. The participant

given information on the ethical guidelines as the relationship and the intimacy during the research, treated as “private and confidential”. The participant has been informed of the control and ownership of the data belongs to the researcher on the purpose of study.

4.12 DATA ANALYSIS

With regard to the type of analysis adopted in this study, it follows that of a qualitative technique (See Figure 4.1). Miles and Huberman (1994) state that qualitative research focuses on ‘naturally occurring, ordinary events in natural settings, so researchers can have a strong handle on what real life is like’ (p. 67). They also argue that another feature of qualitative data is their richness and holism with a strong potential for revealing thick descriptions that are vivid, nested in a real context, and have a ring of truth that has a strong impact on the reader (Miles and Huberman, 1994) and Wilson (2010) and Saunders et al (2012) are also in agreement.

Qualitative research can be seen as representing two paradigms, each historically assuming different ontologies and epistemologies (Bryman and Bell, 2011; Bryman, 2012). A paradigm, in this sense, refers to our working assumptions of the world and how we know and respond to it (Golafshani, 2003).

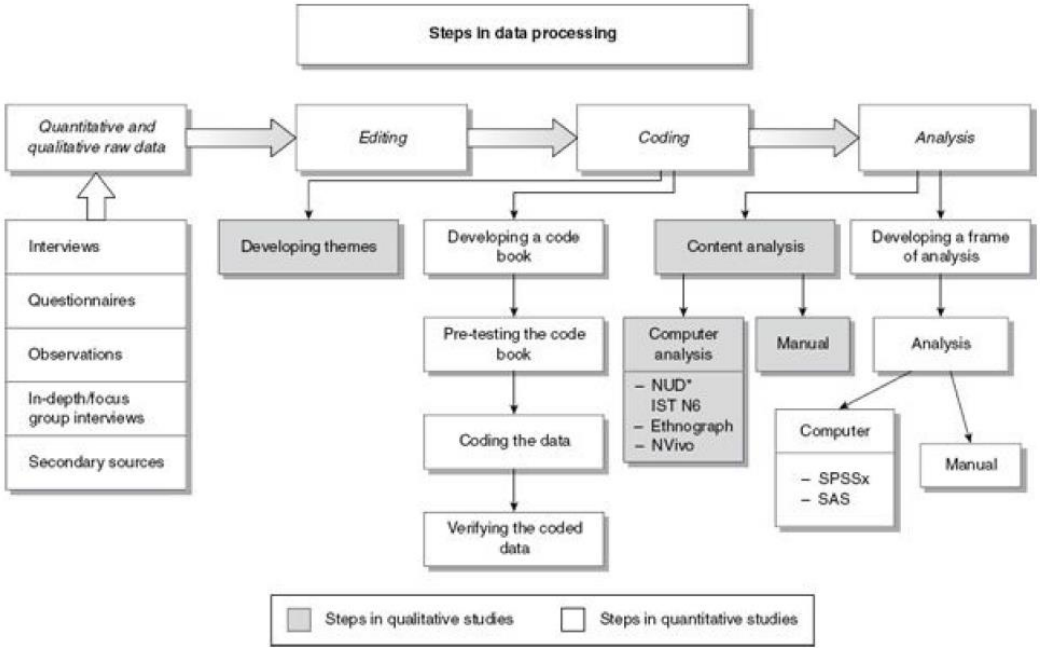

Figure 4.1: Data analysis process for quantitative and qualitative data

Source: Kumar (2014)

As part of the analysis of the interviews, content analysis was employed. The past two decades have seen an increasing scholarly interest in qualitative methodologies to study complex business phenomena, borrowing and adapting from more established disciplines (Miles and Huberman, 1994). The content analysis began as a tool for quantitative researchers, now it is increasingly being used in qualitative studies (Silverman, 2004). Content analysis, a class of methods at the intersection of the qualitative and quantitative traditions, is promising for rigorous exploration of many important but difficult-to-study issues of interest to management researchers (Morris, 1994).

Weber (1990) defined content analysis as "a research method that uses a set of procedures to make valid inferences from text". The key assumption is that the analysis of texts lets the researcher understand other people's cognitive schemas (Huff, 1990).

At its most basic, word frequency has been considered to be an indicator of cognitive centrality or importance (Huff, 1990). Scholars have assumed that groups of words reveal underlying themes, and that, for instance, co-occurrences of keywords can be interpreted as reflecting association between the underlying concepts (Weber, 1990).

Applications of content analysis show three distinct approaches: conventional, directed, or summative. All three approaches are used to interpret meaning from the content of text data and, hence, adhere to the naturalistic paradigm. The major differences among the approaches are coding schemes, origins of codes, and threats to trustworthiness (Kondracki and Wellman, 2002). In conventional content analysis, coding categories are derived directly from the text data. With a directed approach, analysis starts with a theory or relevant research findings as guidance for initial codes. A summative content analysis involves counting and comparisons, usually of keywords or content, followed by the interpretation of the underlying context. The current study adopted a conventional approach to content analysis. Using content analysis enabled the researcher to include large amounts of textual information and systematically identify its properties, e.g. the frequencies of most used keywords in context by detecting the more important structures of its communication content.

Fraenkel and Wallen (2003) noted that content analysis is a study of textual messages of human behaviour in an indirect way. This helps researchers generalise findings, predict the future, understand attitudes, values and cultural patterns of an organisation or an industry or a country. In the study, coding of the transcribed documents involved open coding of meaning units, that is, words, phrases, sentences, paragraphs, which essentially involved labelling concepts. The emerging concepts were mapped into

themes. The themes have been cross-checked on group discussions between the authors and two fellow researchers.

4.13 UNIT OF ANALYSIS

One of the most basic decisions when using content analysis is selecting the unit of analysis. The unit of analysis is the element on which data is analysed and for which findings are reported (Neuendorf, 2002; Patton, 2002). It is the major entity that is studied and to which the result will be applied. Lankoski (2000) identified seven units of analysis that were adopted in the KM related research: Nation/state/industrial sector or a community; Corporation – An organisation with subsidiary and/or several operating units/divisions; Division – An operating unit of a corporation, which in turn controls one or more operating units; Plant – A single unit or site where manufacturing takes place. A plant may belong to a corporation or a division or it may be an independent operation (company/firm); Department – A sub-unit of a plant, which carries out a specific function or is responsible for a specific area of activity; Project – a transient activity with a specific end point; Individual – An individual member of the organisation, such as an employee, director or a manager. The unit of analysis adopted for this study was the KSA construction industry, and the embedded unit of assessment was the 'individual employee'.

4.14 VALIDITY AND RELIABILITY

Greenwood and Levin (2005) offered a succinct definition of validity in qualitative research: 'validity is measured by the willingness of local stakeholders to act on the results thereby risking their welfare on the 'validity' of their ideas and the degree to which the outcomes meet their expectations. Thus, cogenerated contextual knowledge is deemed valid if it generates warrants for action. The core validity claim centres on the workability of the actual social change activity engaged in, and the test is whether or not the actual solution to a problem arrived at solves the problem'.

Miles and Huberman (1994) referred to validity with terms such as internal validity and external validity. Internal validity refers to the accuracy and trustworthiness of the information. That is, whether it represents the participants' reality. In other words, internal validity addresses whether the findings are credible (Creswell, 2003). In this study, threats to validity were minimised through triangulation of data collection methods (interviews, internal and external documents) and verification of the initial thematic codes by participants, where they judged the accuracy of data collected, though not its conclusions (Tajeddini and Mueller, 2012).

External validity explains how generic the research findings are beyond the cases used in the study (Yin, 2003). External validity has been an important issue and the number one subject of discussion when discussing the quality of qualitative research. Yin (2003) notices that critics typically claim that no generalising can be undertaken on the basis of a few cases, let alone a single case. As to the external validity, the results of this study remain limited in their generality, irrespective of the triangulation.

4.15 THE DEVELOPMENT AND VALIDATION OF A FRAMEWORK FOR MANAGING KNOWLEDGE

The empirical findings from the previous stages of the research study and aspects from critical review of literature were taken into consideration in the development of the framework. In this study, during face-to-face interviews, interviewees were asked the need for a framework for managing knowledge in their organisations. 89% of the interviewees cited the need for a comprehensive framework for management of knowledge. Therefore, a framework was developed (see chapter 10 for more details).

The developed framework was validated with 6 professionals. The professionals had over 10 years of work experience in in KM initiatives implementation. The professionals had been informed by e-mail about the objectives of the research study and aim of the framework. Also attached to the email was the developed framework. This e-mail was sent one week prior to the face-to-face interview so as to create an opportunity for the interviewees to review the developed framework. The experts selected were required to provide comments on the developed framework. The interviews lasted between ten and fifteen minutes. The format of these interviews was face-to-face. All face-to-face interviews were recorded with permission and later transcribed. As part of the analysis of the interviews, content analysis was employed.

4.16 SUMMARY

This chapter provided an overview of the research methodology and procedures used in the acquisition and analysis of empirical evidence used to determine how KSA construction organisations are embedding KM strategies for the competitive advantage. The chapter also explains why and how qualitative methodology was adopted for this

research study. Content analysis was used to analyse qualitative data. Results from the analysis of qualitative and quantitative data are discussed in Chapter 5, Chapter 6, Chapter 7, Chapter 8, Chapter 9, and Chapter 10.

The next chapter (i.e. Chapter 5) will discusses the key drivers that have fuelled the need for managing knowledge in the KSA construction organisations.

CHAPTER 5 : DRIVERS FOR MANAGING KNOWLEDGE IN THE KINGDOM OF SAUDI ARABI CONSTRUCTION ORGANISATIONS

5.1 INTRODUCTION

This chapter 5 discusses the key drivers that have fuelled the need for managing knowledge in the KSA construction organisations. The results are based on the perceptions of the 46 interviewees who participated in this study. The findings are also substantiated with the relevant literature.

In this study, during face-to-face interviews, in order to capture the key drivers that have fuelled the need for managing knowledge in the KSA construction organisation, a question was raised, i.e. what drivers have fuelled the need for managing knowledge in your organisation? Five key drivers were revealed. Each of these key drivers is discussed in detail from section 5.3 to 5.7. In doing so, this chapter addresses the first research question of the current study, "what are the key drivers that have fuelled the need for managing knowledge in the KSA construction organisations". Overall, this chapter addresses the first research objective which is "To explore and document the key drivers for managing knowledge in the KSA construction organisations".

5.2 THE KEY CHALLENGES FOR MANAGING KNOWLEDGE IN THE KSA CONSTRUCTION ORGANISATIONS

Table 5.1 presents the key drivers that have fuelled the need for managing knowledge in the KSA construction organisations as revealed by those interviewed in this study. From the data in Table 5.1, it is apparent that the single most important driver for managing knowledge is to improve cost savings. This is followed by to capture key knowledge

assets, to sustain staff skills, to accelerate knowledge flow, and to gain sustainable competitive advantage.

Table 5.1: The drivers for managing knowledge in the KSA construction organizations

Sl. No	Driver for managing knowledge	Total number of interviewees cited (N=46)
1.	To improve cost savings	85%
2.	To capture key knowledge assets	80%
3.	To sustain staff skills	74%
4.	To accelerate knowledge flow	70%
5.	To gain sustainable competitive advantage	66%

5.3 TO IMPROVE COST SAVINGS

To produce high-quality products, to deliver impeccable service and to keep abreast of technological development organisations require skilled employees. They need to hire employees who are able to share knowledge and develop firm-specific competencies. Without skilled employees firms cannot develop core competencies (Leonard-Barton, 1992). The core competence of the organisation lies in the knowledge and skills of its people. Basic codified systems do not create competitive advantage. It is the skills and abilities of people that dictate the future of the organisation. In this study, 85% (39 of the 46) of the interviewees noted that cost savings was the key drivers for managing knowledge in their organizations. Many of these interviewees noted that their organizations are expecting cost savings through capturing and sharing best practices and innovative ideas. This suggests that mapping, capturing, sharing and re-using best

practices can reduce cycle time, reduce defects, reduce re-work, reduce material consumption, and reduce process inefficiencies. This in turn could contribute to improved costs savings.

KM was found to have most impact on the cost of design changes at organisational and project levels. Despite the perception that design change is inevitable during the construction phase of a project, it was found that implementing KM had impact in reducing client and other supply chain related changes. For instance one of the interviewees stated that; “design is an iterative process therefore change is inevitable”, it was found that the early involvement of and collaboration among supply chain organisations had a positive impact in reducing the incidences and cost of design changes.

According to another interviewees: “sub-contractors are brought in during the conceptual stage of projects, which helps enormously as they are able to make enormous contributions to identify all the work that is required for a paricular project and the cost implications. If you can get all the parties involved to buy in from the design stage all the way through the project, you sort of eliminate stupidity waste”.

5.4 TO CAPTURE KEY KNOWLEDGE ASSETS

In this study, 80% (37 of the 46) of the interviewees noted that capturing knowledge assets was the key drivers for managing knowledge in their organizations. ‘Capture’ involves the act of recording identified knowledge in organizational files and knowledge bases. Collison and Parcell (2001) described knowledge capture as a means of capturing know-how in such a way that it can be reused. One of the first steps in

capturing knowledge is to identify the sources of critical knowledge that might be at risk in an organisation e.g. employee leaving due to downsizing or retirements.

5.5 TO SUSTAIN STAFF SKILLS

In this study, 74% (34 of the 46) of the interviewees noted that to sustain staff skills was the key drivers for managing knowledge in their organizations. There was evidence of knowledge sharing and knowledge transfer through mentoring in order to retain the knowledge of experienced staff and to improve the skills of the less experienced ones. For instance, one of the interviewees noted that their organisation has a mentoring and line management system which result reduces knowledge erosion or knowledge loss. Similarly another interviewees commented that "people always work together in a group basically for every position you find out that there are two or three other people that are involved. At times unfortunately if we lose a good staff, another person is there as capable as the other guy leaving. A loss of someone probably does not mean that the knowledge is being lost".

There was a general view that the construction industry is project-based and that every project is unique therefore adversely affecting the impact of KM. The construction industry is like a mobile factory. Other industries have a base and a facility. Construction business is the only business where the construction site is the factory. When you finish, the factory is taken away and the building is left. Perhaps this effect is felt by personnel and teams who have to split and move on to other different projects. One of the interviewees stated that: "At the end of this project, there was a review on what has gone well and what has not gone as well. When you come to the next project

or the same project in 5 years' time, unfortunately the people who have gone through that painful experience on the earlier job are not around with the company or are not the people allocated with the experience of that to the new project".

5.6 TO ACCELERATE KNOWLEDGE FLOW

In this study, 70% (32 of the 46) of the interviewees noted that to accelerate knowledge flow was the key drivers for managing knowledge in their organizations. Accelerating knowledge flow in organisations is a fundamental research issue in the field of KM (Bontis, et al., 2003). Nonaka and Takeuchi (1995) examine how Japanese companies, in contrast to Western companies, have been successful in mobilising knowledge assets both within and outside the organisation. They describe organisational knowledge creation as a continuing interaction and exchange. To enhance the knowledge flows between people to stimulate innovative thinking organisations should first conduct knowledge audit and develop a knowledge map of the sources, sinks, and flows of the knowledge in the organisation (Liebowitz, 2005).

For example, organisations need to achieve a better understanding of the flow of materials and energy in the construction production systems and better information on waste sources and uses. Capturing this knowledge of how to use it will allow broader reuse opportunities and greater potential for waste minimisation. The real value of KM emerges when employees share their interpretations and insights about better process and materials management (Egbu, et al., 2005). Knowledge maps can help in identifying barriers to the flow of knowledge. For example, often 'green products' draw on used components; these are then tested, re-engineered and reassembled into 'new' products while ensuring that the process and the products do not have adverse social

and environmental effects. However, to produce a re-engineered product as good as, or better than new, and to meet the new sustainability challenges require some new knowledge. Knowledge maps can quickly connect experts with each other or help novices identify experts promptly. As a consequence, knowledge maps can speed up the knowledge seeking process and facilitate systematic knowledge development since they connect insights with tasks and problems.

5.7 TO GAIN SUSTAINABLE COMPETITIVE ADVANTAGE

In this study, 65% (30 of the 46) of the interviewees noted that to gain sustainable competitive advantage was the key drivers for managing knowledge in their organizations. Saunders (2000) states that, "Every day, knowledge essential to the business walks out of the door and much of it never comes back. Employees leave, customers come and go, and their knowledge leaves with them. This knowledge drain costs time, money and customers for the organizations". Hence, adopting KM strategies will help to identify and disseminate knowledge of employees and customers, thereby enabling a sustainable competitive advantage for organizations. Egbu *et al*. (2005) suggest the role of KM for competitive advantage include: enhanced organizational innovation and knowledge creativity- new service, rapid commercialization, and renewing unique knowledge and expertise; immediate results in solving organization-wide problems; improved organizational productivity in delivering services to clients; formalized knowledge capture system can be established (Best practices, lessons learned); improved capture and use of knowledge from sources outside the firm; knowledge integration within firms; improved on-the-job training of employees; enhanced client relations - better client interaction; enhanced business development and

the creation of opportunities for organizations; and enhanced and streamlined internal administrative processes.

Other competitive advantages are: enables the identification of knowledge gaps: KM identifies what knowledge is needed to support overall organizational goals. It also focuses efforts on knowledge needed to satisfy present clients and to win new clients; identifies knowledge assets: KM provides the inventory of knowledge assets, allowing them to become more "visible" and therefore more measurable and accountable; and provides a clearer understanding of the contribution of knowledge to organizational performance. It also offers the opportunity for the re-use or better use of valuable knowledge; and improved efficiency: systematic KM processes avoid the duplication of effort and saves external expenditure on knowledge already known internally.

5.8 SUMMARY

To improve organisational performance, KSA construction managers have to recognise and better understand the key knowledge assets available within the value chain. It is critical for organisations to understand the key drivers before implementing KM initiatives. If organisations do not fully comprehend what drives the need for managing knowledge, they may fall into the trap of creating an inefficient KM strategy and operational plans.

KM could impact peoples learning, adoptability and job satisfaction. KM can facilitate employees' creativity and group effectiveness through formal and informal socialisation. To avoid brain-drain, KSA construction organisations need to develop and implement effective knowledge capture strategies aligned with their overall KM

strategies. Some of the knowledge capture strategies include: retaining the best people, mentoring and coaching, sharing best practices, sharing lessons learnt and documentation.

The study concludes that identifying and understanding the key drivers for managing knowledge is a complex process. As revealed in the current study, the single most important driver for managing knowledge is to improve cost savings. This is followed to capture key knowledge assets, to sustain staff skills, to accelerate knowledge flow, and to gain sustainable competitive advantage. A complex mix of political, economic, social and environmental forces drives KSA construction organisations to manage knowledge. Therefore, understanding the drivers for implementing KM strategies is important. This understanding could assist decision makers to develop KM strategies based on the drivers.

This chapter has addressed the first research objective of the current study, "to explore and document the key drivers for managing knowledge in the KSA construction organisations". Therefore, this chapter has answered the first research question which is "what are the key drivers that have fuelled the need for managing knowledge in the KSA construction organisations?" The next chapter (i.e. Chapter 6) will discusses the key KM initiatives that have been implemented in the KSA construction organisations.

CHAPTER 6 : KNOWLEDGE MANAGEMENT STRATEGIES IMPLEMENTED FOR COMPETITIVE ADVANTAGE IN THE KINGDOM OF SAUDI ARABIA CONSTRUCTION ORGANISATIONS

6.1 INTRODUCTION

The purpose of this Chapter is to present the key KM strategies that have been implemented in the KSA construction organisations. The results are based on the perception of the 46 participated interviewees. The findings are also substantiated with the relevant literature. In this study, interviewees were asked list and describe key KM strategies that have been implemented in their organisation through face-to-face interviews. This study revealed three key initiatives under the umbrella of KM that have been implemented across organisations that have participated in this study (see Table 6.1). They are: sharing knowledge, capturing knowledge, and mapping knowledge. Each of these initiatives is discussed in details from section 6.3 to 6.5. Finally, section 6.6 summarises the key findings. In doing so, Chapter 6 addresses the second research objective, which is "to investigate and document the key knowledge management strategies that are currently being implemented in the KSA construction industry." and second research question, which is "what are the key KM strategies currently being implemented in the KSA construction organisations?".

6.2 KEY KM STRATEGIES IMPLEMENTED FOR COMPETITIVE ADVANTAGE IN THE KSA CONSTRUCTION ORGANISATIONS

In this study, interviewees were asked to list and describe key KM strategies that have been implemented in their organisation through face-to-face interviews. Table 6.1

shows the three key KM strategies as revealed by those interviewed in this study. Each of these key strategies is discussed in detail below

Table 6.1: Implementation of KM strategies for competitive advantage in the KSA construction organisations

Sl. No	KM strategies implemented	Percentage of interviewees cited (N= 46)
1	Sharing knowledge	85% (39/46)
2	Capturing knowledge	70% (32/46)
3	Mapping knowledge	50% (23/46)

6.3 SHARING KNOWLEDGE

Knowledge sharing is the voluntary dissemination of acquired skills and experience to the rest of the organisation (Davenport, 1997). Some define internal knowledge sharing as the beliefs or routines for disseminating knowledge and experience across the units of an organisation (Calantone, *et al*., 2002; El Badawy, *et al*., 2015). The acts of sharing are very important since an individual's knowledge will not have much impact on the organisation unless it is made available to other individuals (Nonaka and Takeuchi, 1995). A lack of knowledge sharing may inhibit or hinder KM efforts (Ipe, 2003). Although knowledge exists at different levels of an organisation, for instance, at the individual, team, and organisation levels, sharing of knowledge at the individual level is critical to an organisation.

In this study, 85% (39 of the 46) of the interviewees noted that their organisations have implemented knowledge sharing strategies. The key reasons cited by these interviewees

include: to share best practices, to share latest policy issues with key employees, and to accelerate and improve the flow of knowledge between key stakeholders (e.g. between procurement team and design team). In this study, most often cited knowledge sharing techniques and technologies include: community of practice, pod casting, face-to-face discussion, mentoring, seminars, bulletin board, company television channels, team briefs, teleconference, forums, telephones, mentoring and shadowing, an organisation's newsletters, leaflets, and websites.

For instance, one of the interviewees noted that:

> "Sharing successes and failures stories in meetings and discussions with employees and key stakeholders are often critical to our success. We also use newsletters as a channel to share success stories, how our colleagues or teams have succeeded in reducing waste or delivering higher quality product, or increased customer satisfaction".

Of the interviewees, 65% (29 of the 46) of the noted that their organisations have monetary and non-monetary reward system for sharing knowledge; 61% (28 of the 46) noted that their organisations encouraged experienced employees to share their knowledge with new or less experienced employees; 52% (24 of the 46) noted that their organisations have a specific training programme for expanding awareness on sharing knowledge; and only 44% (20 of the 46) noted that their organisations created new job roles and positions (e.g. knowledge transfer officers) for sharing knowledge.

For instance, in this study, one of the interviewees noted that their organisation has established a cash prize in recognition of employees' exemplary sharing of knowledge related to waste reduction initiatives. It is positive incentive for employees to go beyond

their regular job responsibility and to become eligible for a cash award of SR250 to SR500. Another interviewee noted that:

> "We have different types of monetary reward systems within our company for encouraging and recognising employee performance with respect to knowledge management. However, I believe that there should be a mixture of monetary and non-monetary rewards".

Interviewee from the large multinational company noted that:

> "We believe in team working and thus allow the rewards on the achievement of team task rather than individuals because if we do so, employees that are less competent may feel de-motivated. This allows the employees to be active in sharing the knowledge."

However, many interviewees believe that, monetary benefits are not the only way to encourage knowledge sharing culture. To encourage employees, many organisations in this study, give out special 'knowledge management awards' every month, quarter, or annually to teams or an individual who successfully introduce new KM related processes. Typical non-monetary rewards include: public recognition through press releases, newsletter which is distributed to key stakeholders such as suppliers, employees, and local communities and letters of thanks and commendation. Another interviewees from the large construction company echoed the same view that:

> "I think non-monetary incentives such as recognition and employee appreciation are more rewarding and valued by employees rather than mere monetary rewards. Promotion and job enrichment are the real incentives which motivate employees. Therefore, our organisation tries

> to promote employees who are encouraging the flow of knowledge rather than restricting it."

However, one of the interviewees noted that:

> "…There are no specific incentives in our organisation. Employees are highly subjective about their tasks and there is a consistent habit of knowledge sharing within the organization among employees."

Analysis of the above results suggests that reward system is a critical tool to implement KM strategies in the KSA construction organisations. But the problem with many reward systems and incentives for sharing knowledge is that useful knowledge comes from the lower cadre in the organisation, from people who are not on incentive systems and probably respond much more readily to the feeling that they belong to highly motivated, leading edge, innovative groups of people (Olatokun and Nwafor, 2012).

It is evident from the above results that knowledge sharing strategies are well implemented in the KSA construction organisations. It is evident that organisations are increasingly recognising the importance of utilising their knowledge assets. This recognition is manifested by the creation of reward systems, training programmes and appointment of KM specialists to promote knowledge sharing culture in their organisations.

However, 15% (7 of the 46) of the interviewees noted that their organisations do not have knowledge sharing strategies. Some of the key concerns cited by these interviewees include: lack of top management support, employees reluctant to spend time on knowledge sharing, fear of hosting 'knowledge practices' and low awareness

and realisation of the value and benefit of possessed knowledge to others. One of the most important issues when working on a KM strategy is to create the right incentives for people to share and apply knowledge (Olatokun and Nwafor, 2012). Whittington, et al., (1999) noted that the focus of change is not only on organisational process and structure, but also organisational culture. This will, in turn, help harness the discretionary effort essential for installing a sustainable enterprises culture and successfully propelling the entire organisation into future. Therefore, it is suggests that cultural change initiatives such as incentive and reward systems for promoting knowledge sharing need to be institutionalised.

According to Nonaka and Takeuchi (1995), information is the "flow of message", and knowledge is created when this flow of messages interacts with the beliefs and commitments of its holders. Also they argued that organisations cannot create knowledge without individuals, and unless individual knowledge is shared with other individuals and groups, the knowledge is likely to have limited impact on organisational effectiveness. Skyrme (2001) noted that compensation and recognition for contributing to knowledge sharing efforts is not sufficiently rewarded to individuals by the organisation. If there is inadequate remuneration, KM strategies can potentially fail as people are less likely to contribute to it. Personal reward systems must support the culture of sharing knowledge (Mayo, 1998). To improve this process, it is crucial to reward employees that contribute their expertise and to make sure employees understand the benefits of KM.

The concept of culture is particularly important when attempting to manage organisation-wide change (Senge, et al., 2007). Practitioners are increasingly realising that, despite the best-laid plans, organisational change must include not only changing

structures and processes, but also changing the organisational culture including reward systems as well. This is also the case of KM strategies deployment in the KSA construction organisations, which demands a cross-functional teamwork, commitment and active participation.

6.4 CAPTURING KNOWLEDGE

Many construction organisations are now engaging in KM in order to leverage knowledge both within their organisation and externally to their shareholders and customers. Ulrick (1997) suggested that organisations need to be able to capture the tacit knowledge of its employees and to do this effectively; it is argued that management needs to involve and engage employees fully in the activities of the organisation. According to Tan et al. (2010) knowledge capture is to identify and store knowledge and evaluate information captured; knowledge sharing is to exchange and transfer knowledge to an individual or organisation through media; knowledge re-use is to re-apply knowledge stored for innovation and updating knowledge is to archive and refine knowledge in the repository and keep necessary information up to date. Brooking (1996), noted that only 20% of knowledge available to an organisation is actually used and the remaining 80% of the employee's knowledge is wasted without effectively capturing it.

In this study, only 70% (32 of the 46) of the interviewees noted that their organisations have implemented knowledge capturing strategies. The key reasons cited by these interviewees include: to improve sustainable competitive advantage, to reduce economic risks, to reduce re-work, and to reduce new hires learning time. For instance, in this study, one of the interviewees noted that:

> "Our organisation has lacked knowledge about the latest fiscal/regulatory measures, consequences of waste, what happened to it and the potential for reducing it. Therefore, there was a strong need for us to know regarding these issues. In an effort to capture waste management related knowledge, we send our key employees to attend waste management training course to gain the necessary skills. I must admit that training programme was very good. After attending the training course, our employee's hands-on training experience served as the primary source of knowledge about waste reduction activities".

Analysis of the above statement suggests that organisations are capturing from external consultants. Using partnerships or strategic alliances specially to capture knowledge is a fairly common practice among the interviewed organisations in this study. Most often cited strategies used under the umbrella of 'knowledge capture' include: encouraging employees to participate in project teams with external experts (68%), capturing knowledge from external sources (65%) (e.g. academic institutes, Government organisations), a written knowledge capture policy (60%), dedication of resources for knowledge capture (50%), IT infrastructure (45%), specific training programmes (35%), and reward systems to promote knowledge capture strategies (30%).

Tan et al. (2007) deduces that knowledge capture encompasses three sub-processes. Firstly and foremost, the identification and location of knowledge: concern with the discovering of the natures of knowledge to be managed and the location where such knowledge is situated for learning (Markus, 2001). Secondly, representation and storage of knowledge: meaning indexing, organising and structuring knowledge into exact knowledge areas and authority in the standards (Carrillo and Chinowsky, 2006). Finally,

validation of knowledge: to ensure the credibility of knowledge captured and proper storage, with all relevant related facts and in the right format (Kasimu et al., 2013). Dalkir (2005) classified KM technologies according to the following schemes: (a) communication, (b) collaboration, (c) content creation, (d) content management, (e) adaptation, (f) elearning, (g) personal tools, (h) artificial intelligence, and (i) networking. The two important techniques used in the capture of tacit knowledge are content creation and content management using artificial intelligence tools such as decision support systems and expert systems. In this study, most often cited knowledge capturing techniques and technologies include: capturing best practices through interviewing "experts", intranet, learning histories, exit interviews, conducting surveys, after-action-review, real time audio and video recording and minutes of meetings.

In this study, 30% (14 of the 46) of the interviewees noted that their organisations do not have any strategies to capture knowledge. Some of the concerns cited by these interviewees include: difficulty to capture tacit knowledge, too expensive, difficulty to capture knowledge from external stakeholder, lack of awareness, and lack of knowledge capture tools. Noordin et al. (2012) stressed that failure to capture the knowledge and experiences during the construction phase will result in a great loss to not only the organisation, but represent unnecessary wastages of assets. Indeed, Kasimu et al. (2013) expressed that knowledge across a project is key, in order to transfer knowledge from a current project to future developments. In other words, allows individuals to use existing proven knowledge to solve issues as a substitute of generating new knowledge, which can take up vast amounts of time and resources (Fernie et al., 2003). Thus by, this has shown the need for the development of appropriate strategy for capturing knowledge of construction projects by using technology, techniques, concept and tools. Furthermore, Kasimu et al. (2013) points out that capturing knowledge will help to

prevent the loss of critical knowledge due to retirement, downsizing and outsourcing and discards the experts and professionals at the expiration of the project.

However, this study results suggest that, the level of implementation of knowledge capturing strategies is moderate. The results are not surprising because Suresh and Egbu (2012) revealed that the level of implementation of knowledge capture initiatives is still in their infancy in the construction sector. The construction industry is characterised by a wealth of experiential knowledge, yet senior staff retire or leave organisations regularly, potentially taking tacit knowledge and a potential source of competitive advantage with them. Capturing key lessons learned by others as well as good work practices helps to prevent firms from repeating errors while allowing new project teams to build on the work of their predecessors (Dixon, 2000). Therefore, the KSA construction organisations should decide how best to cope with this problem such that as much knowledge as possible is retained within organisational boundaries.

6.5 MAPPING KNOWLEDGE

In this study, only 50% (23 of the 46) of the interviewees noted that their organisations have implemented strategies related to mapping knowledge. Some of the knowledge mapping tools that are most commonly used include: corporate yellow pages, expertise database, hard-tagging experts, mind map, business process map and topic maps. The key reasons cited by the interviewees for mapping knowledge include: to improve the flow of knowledge, to identify internal knowledge assets, and to improve accessibility to knowledge. For instance, one of the interviewees noted that:

> "Recently, we have modified our company webpage and included a section on 'Health and Safety' (H&S). Our web team developed and

> included a sitemap of valuable 'know-how' and 'how to do' on H&S. This section includes: quarterly electronic newsletters, annual H&S reports, key contacts related to H&S, emerging H&S issues, experts' opinions and success stories related to H&S in our organisation".

The aforementioned statement reveals that, organisations are mapping knowledge. Knowledge mapping aimed at the external stakeholders such as communities is most relevant when it comes to visualising and presenting organisation H&S performance. This can be a form of marketing where the purpose is to attract positive attention, and in the extension some kind of pay-off, new clients/customer contacts, invitations or recognition. The company homepage is an obvious technology for this type of communication. The benefits of using maps in this way improve relationships with the external stakeholder as well as internal staff and a sense of common commitment towards H&S.

The most often cited strategies implemented for mapping knowledge include: identification of internal and external knowledge sources (45%), conducting knowledge audit (40%), dedication of time for mapping knowledge (30%), encouraging employees to participate in mapping process (25%), project teams with external mapping experts (23%), information and communication technologies (ICT) infrastructure (20%), specific training programme(s) (17%), and reward system(s) to promote knowledge mapping initiatives (11%). Overall this study results suggest that knowledge mapping strategies are less implemented in the construction and the NPOs sector. This could be due to the current KM literature has only a few stories to illustrate the potential of such knowledge maps (Eppler, 2003). However, with the rapid development of ICT it is

predicted that they may soon become a standard element in organisations' knowledge management strategy.

Significantly, 50% (23 of the 46) of the interviewees noted that their organisations do not have any strategies for mapping knowledge. Some of the key reasons cited by these interviewees include: lack of knowledge mapping awareness, lack of infrastructure, difficult to map stakeholder's knowledge, and difficult to map tacit knowledge. Knowledge mapping confers benefits such as improved ability to locate knowledge in processes, people, repositories and context; and improved awareness of islands of expertise and evaluation of intellectual and intangible assets, improved decision making and problem solving by providing applicable information, and effective knowledge sharing associated with knowledge exploitation in organisations (Davenport and Prusak, 1998; Eppler, 2003). Conducting 'knowledge auditing' would show how organisation currently creates new knowledge, stores, access, use and share the knowledge that they need to do their jobs. According to Burnett, et al., (2004) a successful audit should effectively reflect the organisation knowledge assets and how it flows. It also shows key internal and external sources of knowledge that organisations are using for solving day-to-day business problems.

6.6 SUMMARY

Knowledge is an organisations most critical asset and a source of lasting competitive advantage. The construction industry is one of the critical industries that operates in an information-rich environment, which relies heavily on knowledge as one of the strategic resources to ensure the tasks associated with the domain can be performed effectively and efficiently by the project team members. Knowledge has now become widely

recognised and accepted as a valuable organisational resource in the KSA construction business. As revealed by the study, the three key KM strategies have been used in the KSA construction organisations at different levels of implementation. They are: sharing, capturing, and mapping knowledge. This study results suggests that the extent of implementation of initiatives related to sharing knowledge is relatively high when compared to capturing and mapping of knowledge. Strategically, tacit knowledge capture is critical when an issue of knowledge continuity arises or due to other concerns with groups and the organisation as a whole. Employee's especially new hires are facing steeper, longer learning curves at the same time that construction organisations are looking for faster revenues and higher productivity. Therefore, there is a great need to develop systems that capture tacit knowledge more effectively in the KSA construction organisations.

The KSA construction organisations can benefit from developing a knowledge map or taxonomy that describes the knowledge critical for operations, skills required to perform the tasks, and individuals currently performing these critical tasks. However, it is evident from the current study results that knowledge mapping strategies is under implemented across the KSA construction organisations. This could be due to the fact that mapping of knowledge is in its infancy in the construction organisations. Therefore, there is an urgent need for developing and deploying industry wide knowledge mapping awareness programmes to improve understanding on the concept and benefits of mapping knowledge. The research concludes that managing knowledge is an integrated and complex process.

The practical implication of this research is that the KM should not only focus on the specific knowledge to be captured, shared, mapped and transferred between individuals

but should also address strategic concerns at group and organisational levels. Therefore, construction organisations in the KSA must also hone in on these basic modern day truths and implement KM training programmes which focus both on tacit and explicit knowledge. Taken together, the impact of management commitment and leadership, KM policies, structures, reward systems, training programmes and performance reporting are key factors in successful implementation of KM strategies in the KSA construction organisations.

This chapter has addressed the second research objective of the current study, "to investigate and document the key knowledge management strategies that are currently being implemented in the KSA construction industry". Therefore, this chapter has answered the second research question which is "what are the key KM strategies currently being implemented in the KSA construction organisations?" The next chapter (i.e. Chapter 7) will discusses key KM related training strategies adapted in the KSA construction organisations.

CHAPTER 7 : KNOWLEDGE MANAGEMENT RELATED TRAINING STRATEGIES IN KINGDOM OF SAUDI ARABIA CONSTRUCTION INDUSTRY

7.1 INTRODUCTION

The purpose of this Chapter is to present the key KM related training strategies adapted in the KSA construction organisations. The results are based on the perception of the 46 participated interviewees. The findings are also substantiated with the relevant literature. In this study, interviewees were asked list and describe KM specific current training programme in place and need of future KM specific training programme through face-to-face interviews. This study revealed seven types of KM specific training strategies adopted in the KSA construction (see Table 7.1). They are: training programmes specifically designed for KM, communication skills, time management skills, training on-the-job, mentoring, leadership skills, and client management. Furthermore, the study revealed five types of future KM specific training strategies needed in the KSA construction organisations. They are: capturing knowledge, sharing knowledge, creating culture for KM, knowledge mapping, and efficient use of KM tools (see Table 7.2). Finally, section 7.4 summarises the key findings. In doing so, Chapter 7 addresses the third research objective, which is "to critically appraise and document the key knowledge management related training strategies adopted in the KSA construction organisations". In doing so, section 7.2 addresses the third research question of the current study, which is "what are the future KM specific training strategies adopted in the KSA construction organisations?". Furthermore, section 7.3 addresses the fourth research question of the current study, which is "what are the future KM specific training strategies adopted in the KSA construction organisations"?.

7.2 THE NATURE OF TRAINING PROVISION THAT CURRENTLY EXIST FOR KM IN KSA

During the semi-structured interviews in this current study, the subject of training was raised, i.e. "in your organisation, is there any specific KM specific training programme in place"? The interviews with 46 professionals from the KSA construction organisations revealed seven types of KM specific training strategies adopted in the KSA construction organisations (see Table 7.1).

Table 7.1: Current KM specific training strategies adopted in the KSA construction organisations

Sl No	Current KM specific training strategies	Percentage of interviewees cited (N=46)
1	Training programmes specifically designed for KM	63%
2	Communication skills	57%
3	Time management skills	37%
4	Training on-the-job	37%
5	Mentoring	19%
6	Leadership skills	19%
7	Client management	19%

In this study, 63% (29 of the 46) of the interviewees asserted that they had a training programmes specifically designed for KM implementation. Most often cited topics under the KM training programmes include: drivers for KM, strategies, sharing knowledge, identifying knowledge and storing knowledge. The interviewees also

revealed instances where members of staff had to submit reports after attending external training. In one of the organisations, external training was encouraged, for which employee's paid 20% of the training fee and the remaining 80% was paid by the organisation. For instance, one of the interviewees in the current study had attended the training course titled, "improving business performance through knowledge management initiatives". The interviewee further noted that he now fully realises the importance of knowledge and the amount of key knowledge available within his organisation. He also thought that training within organisation, for KM, is very important and would be adopting mentoring as part of knowledge capture initiative.

In the study, for external training, KSA construction organisations would prefer a one hour training programme which deals with the benefits, challenges and case studies of other construction organisations who have successfully implemented knowledge management initiatives. The interviewees also said that most of the training programmes were hosted in Riyadh and hence they would prefer training to be conducted regionally. This would enable more employees in construction organisations to attend.

In other organisation, one of the interviewees suggested that they had in-house training for KM. The UK based CITB (1988) study which shows that most construction organisations prefer in-house training courses to external courses. Findings from this study suggest that nearly 30 years after the CITB study, the attitude towards in-house training has not changed. Three reasons given for in-house training on KM are: In-house courses are cheaper than external courses; In-house courses are directly geared towards meeting the objectives/needs of the organization; and there seemed to be very little or no external courses focused on KM

However, 37% (17 of the 46) interviewees stated that they did not have any training (a specific to KM). The reasons stated were: KM in construction industry is a specialised area and to the best of their knowledge; no external training providers offered courses in this area; Professionals had to make a case why particular training was important and how it would help the organisation. Hence, 17 interviewees said that they lacked the awareness of KM benefits and did not present a case to their management to attend KM training course. For instance, one of the interviewees stated that:

> "Employees training programmes demand a significant investment in terms of both financial and human resources. Training can also take up a great deal of time which could adversely effects schedules and deadlines".

This was further emphasised by another organisation's manager who noted that training was a waste of time and did not feel the need to attend training because he felt he was too busy dealing with urgent tasks for the day-to-day survival of his organisation. Furthermore, interviewee noted that professionals in the construction industry are usually recruited because they are experienced and familiar with the industry; therefore there was no need for training specific to KM.

A literature review indicated that training for KM in specific business settings, had not been fully developed (Muscatello and Joseph, 2003). The current study results suggests that for effective implementation of KM strategies, there is an urgent need for KSA construction industry to develop and deploy appropriate KM related management training programme(s). The challenge, therefore, is for business schools and training consultants to bridge the wide gap in the market place. Continuing Professional

Development (CPD) programme(s) and executive training programme(s) are valuable ways to raise knowledge management awareness. Education and training programmes should be re-orientated to cover aspects of knowledge, data and information; KM processes, technology and people; managing construction stakeholder knowledge; critical success factors; and benefits of KM strategies. The education and training should be dynamic and adaptable to the increasing changing needs of business, society and people at large.

In this study, 57% (26 of the 46) interviewees noted that they had a communication skills related training programmes. Most of these interviewees noted that communication training on the job is the most crucial factor. The interviewees stated that a wide range of communication related training programmes are undertaken by them to train the manager and the staff members within the organisation. Such training is said to be helpful for improving the skills and knowledge of the employees and improves their overall performance. For instance, one of the interviewees stated that:

> "we have a perception that investment in communication skills will enables organisations to get an edge among the clients base."

Analysis of the above statement reveals that development of the communication skills and abilities of the employees is directly related to overall performance and client satisfaction for the organisation.

In this study, 37% (17 of the 46) interviewees noted that they had a time management related training programmes. For instance, one of the interviewees stated that:

> "Properly implemented time management training programmes can help in harnessing their knowledge, building confidence and creating well-developed client services".

Analysis of the above statement reveals that development of the time management skills and abilities of the employees is directly related to overall performance and client satisfaction for the organisation.

The study findings are also in alignment with the literature which states asserts that employee communication and time management training pays a highly significant role in the improving the performance and the productivity of the employees. Such consistent training programmes also serve to be useful in enhancing the knowledge, attitudes of the employees, skills, thereby encouraging the growth and development of the employees skills (Nassazi, 2013; Hafeez and Akbar, 2015; Facteau, et al. 1995).

In this study, 37% (17 of the 46) interviewees noted that they had a on the job training and 19% (9 of the 46) interviewees noted that they had a mentoring scheme. For instance, one of the interviewees noted that:

> "Some of the most critically important training programs include communication skills, leadership training, mentoring and on the Job training".

Similarly, other interviewee stated that:

> "On the job training, mentoring, communication skills, customer service etc. are the training and education programs we have for the employees

within our company. Our organisation beliefs on the job training can provide employees with more knowledge hence supports it."

The study findings thus indicate the application of on the job training, mentoring and skills development as the key training activities currently undertaken by the organisations to impart skills and knowledge to the employees. For instance, the examination of the literature on the role of mentoring reveals that it serves as a highly pertinent strategy to improve the performance of the employee and the organisation. The literature has also highlighted that unlike other training methods, mentoring relationship with the manager enables a close supervision that helps in developing skills, gaining knowledge and address gaps in the current ability (Allen, et al. 2004; DeMik, 2007; OPM, 2008; Nonaka and Takeuchi, 2011; Elnaga and Imran, 2013). These findings indicate the significance of mentoring for improving the performance of the employees and supporting the learning and development of motivated employees who are seeking to gain professional and personal growth.

The findings of the interview further revealed that leadership skills (19%) are also considered to be current KM specific training programmes. Leadership skills development is as a key training method currently adopted by the small number of interviewed organisations. The literature also identifies leadership as an effective method as it encourages the employees to inculcate essential skills related to decision making and exploring adequate solutions for the emerging challenges with higher efficiency (Nonaka and Takeuchi, 2011; Kraus and Wilson, 2012; and Jahenzeb and Bashir, 2013). Based on these findings, it can be interpreted that leadership skills are useful and efficacious methods currently adopted by the organisations in their training programmes that has a positive impact on KM within the KSA construction

organisations. However, the lack of leadership skills is one of the most important challenges organisations face in implementing KM related change initiatives.

In this study, 19% (9 of the 46) interviewees noted that they had a client management related training programmes which is of the crucial factors that influence KM within an organisation. In this respect, one of the interviewees noted that the role of client/customer services as a part of training programme, and thus makes a key impact on the contribution of the KM initiatives. In this respect, the literature also confirms with these findings and asserts that effective training in delivering high level client/costumer service plays a key role in enhancing KM within an organisation and thus highlights the significance of the role of human resource on KM (Clardy, 2012; Baldwin., et al. 1991). Further, the findings of the interview also revealed that the KM has a significant impact on the employees in gaining skills for providing efficient client/customer services and thus enhances the overall productivity of the organisation.

7.3 THE FUTURE TRAINING RELATED TO KNOWLEDGE MANAGEMENT IN KSA

The interviewees were asked to volunteer information on the nature of training for KM in the next 5 years considering how their jobs are likely to change in the future. The study revealed five types of future KM specific training strategies needed in the KSA construction organisations (see Table 7.2).

Table 7.2: Future KM specific training strategies needed in the KSA construction organisations

Sl No	Future KM specific training strategies	Percentage of interviewees cited (N=46)
1	Capturing knowledge	80%
2	Sharing knowledge	70%
3	Creating culture for KM	57%
4	Knowledge mapping	44%
5	Efficient use of KM tools	33%

Of the interviewees, 80% (37 of the 46) noted that training programmes related to capturing knowledge is the way forward for the KSA construction industry. During the interviews, most of the participants realised that there was immense knowledge embedded in their organisations, but they lack awareness and understanding on how to capture knowledge. They also suggested that mentoring/coaching, apprenticeship and job rotations were means of capturing organisational tacit knowledge. For capturing explicit knowledge, the efficient use of technology was thought to be useful. For example, through indexing and archiving best and worst practices in various projects. The interviewees also noted that knowledge capture and codification are particularly critical when an issue of knowledge continuity arises.

For instance, one of the interviewees thought that there is a need for formalised training programmes to "collect and obtain" past and present knowledge from an individual, group or organisation in order to improve organisational competitiveness. Three of the interviewees suggested a formalised training programme using knowledge capture training metrics of input or output indicators which could be used to monitor the performance of knowledge assets. On the input side, the indicators should reflect enablers or actions required to implement or achieve business objectives. Examples of input indicators are number of training days per employee, proportion of staff with professional qualifications or with over two years' experience, and senior managers with experience on major projects. The output indicators should measure the performance or the result of those actions, such as the number of defects after project completion, complaints from clients, and cost and time overruns".

Four of the interviewees suggested that motivation for increasing their skills seems to be lacking because they do not believe the organisation values training. This may be because the organisation has not provided an incentive or a vehicle that meets their particular needs. Training in non-working hours is considered to be difficult because the employees have other demands on their time. Facteau et al.'s., (1995) study indicates that motivation has an important influence on the extent to which trainees actually learn the material presented to them during a training program. Baldwin et al.'s., (1991) study found that motivation may influence important training outcomes such as performance appraisals. The construction industry has a belief that the approach of motivating employees to give effective performance may lead to enhance their performance as well as the performance of the organisation (Dries, 2013). None of the interviewed organisations noted any influence of training on performance appraisals.

In the study, 70% (32 of the 46) of the interviewees noted that training programmes related to sharing knowledge is the way forward for the KSA construction industry. For instance, one of the interviewees noted that sharing knowledge is a major challenge for their organisations due to a variety of reasons; therefore, there is a need to understand it further. Knowledge sharing behaviours facilitate learning among employees and enable them to resolve problems similar to situations encountered by others in the past, thus enabling quicker responses to the clients (Sher and Lee, 2004). Such behaviours may, in some circumstances, stimulate other individuals to capture new knowledge (Ipe, 2003).

Furthermore, knowledge sharing activities are of utmost importance for knowledge retention because when employees leave an organisation their knowledge leaves with them (Bender and Fish, 2000). Although knowledge exists at different levels of an organisation, for instance, at the individual, team, and organisation levels, sharing of knowledge at the individual level is critical to an organisation. However, national and organisational cultural characteristics play a key role in successful knowledge sharing process.

Of the interviewees, 57% (26 of the 46) stated that creating culture for the knowledge management is the way forward for the KSA construction industry. Arif et al. (2015) argued national culture as one of the major barriers to effective KM practices. However, Magnier-Watanabe and Senoo (2008) found organisational characteristics to be a stronger prescriptive factor in KM compared to national culture. De Long and Fahey (2000) suggested four ways in which culture affects the behaviours central to knowledge creation, sharing and use. First, culture shapes assumptions about what knowledge is and which knowledge is worth managing. Second, culture identifies the relationships between individual and organisational knowledge, determining who is

expected to control specific knowledge, who must share it and who can store it. Third, culture shapes the processes by which new knowledge is created, legitimised and distributed in firms. Fourth, culture creates the context for social interaction that determines how knowledge will be used in particular situations.

Serna (2015) suggested that knowledge should be managed along with the human experience of knowledge itself and that proper management of such knowledge is required. Hofstede (2001) suggests that there would be a significant impact of culture on management practices and processes. Therefore, it is important to incorporate the cultural aspects in the future training programmes related to KM in the KSA construction industry.

In the study, 44% (20 of the 46) of the interviewees noted that training programmes related to mapping knowledge is the way forward for the KSA construction industry. Skyrme and Amidon (1997) noted, most research attention has been given to KM within the organisation, and knowledge mapping remains an emergent research issue. Knowledge mapping is the field within KM that aims to optimise the efficient and effective use of the organisation's knowledge. Davenport and Prusak (1998) note that developing a knowledge map involves locating important knowledge within the organisation and then publishing some sort of list or picture that shows where to find it. Knowledge maps typically point to people as well as to documents and databases.

Effective knowledge maps should point not only to people but to documents and databases as well. Knowledge maps should also locate actionable information, identify domain experts, and facilitate organisation-wide learning (Eppler, 2003). They should also trace the acquisition and loss of knowledge, as well as map knowledge flows

throughout the organisation (Grey, 1999). Therefore, it is important to incorporate the knowledge mapping concepts in the future training programs related to KM in the KSA construction industry.

Of the interviewees, 33% (15 of the 46) stated that efficient use of KM tools is the way forward for the KSA construction industry. The current business environments are characterised by globalization, dynamism and increasing levels of complexity due to rapid changes in technology and its connected intricate knowledge (Siakas et al., 2010). However, the KSA construction sector has been slow to recognize the benefits of information technology (IT) as a major communication tool. There are several issues with the current use of technologies in the interest of KM. The challenge for technology is to facilitate a dynamic process of knowledge creation and representation, not a static process of information management. Current IT based KM technologies focuses only on explicit knowledge, which can be expressed in words and numbers and easily shared, and fails to deal with tacit knowledge. Therefore, it is important to incorporate the KM tools and its concepts in the future training programs related to KM in the KSA construction industry.

7.4 SUMMARY

Knowledge has now become widely recognised and accepted as a valuable organisational resource in the business world. The KM programmes have been used in the KSA construction organisations at different levels of implementation. Training is an essential process that develops three dimensions of the knowledge of employees of the organisation that are competence, knowledge and exploitative knowledge. The KSA

construction industry is focused on their current as well as future training provision programmes for the management and enhancement of organisational knowledge.

As revealed by the study, current training programmes specifically designed for KM in the KSA construction industry include: communication skills, time management skills, training on-the-job, mentoring, leadership skills and client management. Furthermore, the nature of future training for KM include: capturing knowledge, sharing knowledge, creating culture for KM, knowledge mapping, and efficient use of KM tools. The research study indicates that training interventions are a complex and context-embedded activity. It requires the consideration of different issues discussed in a holistic way. The current study results suggest that for effective implementation of KM strategies, there is an urgent need for KSA construction industry to develop and deploy appropriate KM related management training programme(s). The challenge, therefore, is for business schools and training consultants to bridge the wide gap in the market place. Continuing Professional Development (CPD) programme(s) and executive training programme(s) are valuable ways to raise KM awareness.

Leadership plays an important role in breaking down barriers in achieving KM goals – barriers such as tunnel vision, past practice, old ideas and cultural frameworks that together combine to discourage new visions of the future. Leadership is about preparing organisation with a KM vision and values that resonate with the team, employees, and key stakeholders. Therefore, there is an urgent need to develop and deliver a bespoke training framework to address, improve and measure the effectiveness of leadership skills for implementing KM related change initiatives in the KSA construction industry.

The practical implication of this research is that the KM should not only focus on the specific knowledge to be captured, shared, mapped and transferred between individuals but should also address strategic concerns at group and organisational levels. Therefore, construction organisations in the KSA must also hone in on these basic modern day truths and implement KM training programmes which focus both on tacit and explicit knowledge. To gain competitive advantage, it is necessary for KSA construction industry to recognise and use a blend of ICT and non-ICT based KM tools. It is advisable to use conventional, simple, low cost, and easy to use with minimum training needs KM techniques and technologies such as mentoring and on-the-job training strategies.

This chapter has addressed the third research objective of the current study, "to critically appraise and document the key knowledge management related training strategies adopted in the KSA construction organisations". Therefore, this chapter has answered the third research question which is "what are the current KM specific training strategies adopted in the KSA construction organisations?" and fourth research question which is "what are the future KM specific training strategies adopted in the KSA construction organisations?". The next chapter (i.e. Chapter 8) will discusses key challenges KSA construction organisations faced with implementing KM strategies.

CHAPTER 8 : THE KEY CHALLENGES FOR MANAGING KNOWLEDGE IN THE KSA CONSTRUCTION ORGANISATIONS

8.1 INTRODUCTION

This chapter discusses the results on the key challenges the KSA construction organisations face in managing knowledge. The findings are validated and elaborated using the results from the qualitative data from 46 professionals. The findings are also substantiated with the relevant literature. In doing so, this chapter addresses the fourth research question of the current study, which is "to critically appraise and document the main challenges associated with implementing key knowledge management strategies in the KSA construction industry", and the fifth research question - "what key challenges do KSA construction organisations face in implementing knowledge management initiatives?.

8.2 THE KEY CHALLENGES FOR MANAGING KNOWLEDGE IN THE KSA CONSTRUCTION ORGANISATIONS

Table 8.1 presents five key challenges the KSA construction organisations face in managing knowledge as revealed by those interviewed in the current study. From the data in Table 8.1 it is evident that the single most important challenge is capturing tacit knowledge. This is followed by managing stakeholders' knowledge, cultural issues, leadership support, and organisational infrastructure issues. Each of these challenges is discussed in detail below.

Table 8.1: The key challenges KSA construction organisations face in managing knowledge

Sl. No	Challenges face in managing knowledge	Total number of interviewees cited (N=46)
1.	Capturing tacit knowledge	91%
2.	Managing stakeholders' knowledge	87%
3.	Cultural issues	83%
4.	Leadership support	80%
5.	Organizational infrastructure issues	76%

8.3 CAPTURING TACIT KNOWLEDGE

In this study, overwhelmingly 91% (42 of the 46) of the interviewees cited that capturing tacit knowledge is one of the key challenges for the KSA construction organisations. The construction industry is one of the critical industries that operate in an information-rich environment, which relies heavily on tacit knowledge as one of the strategic resources to ensure the tasks associated with the domain can be performed effectively and efficiently by the project team members (Egbu and Robinson, 2005). The tacit knowledge is normally defined as the personal knowledge which is difficult to be: formalised, written down, explained and described. In contrast of the tacit is the explicit knowledge which can be easily to formalised and described, which means it is easily transmitted between people (Nonaka, 1994). In the same vein Hariharan (2015) supported this view defining the tacit knowledge is normally managed by experts due to

is difficult nature to document and share with others. In broader perspective Gerami (2010) also shared the same opinion, pointing out that, this type of knowledge is normally in peoples mind, obtained through their experiences.

For practitioners, tacit knowledge remains largely problematic in terms of methods of mapping and capturing. The view has emerged that the challenge of KM is to understand how to create practical solutions to support individuals, groups and organisations as they generate and capture multi-faceted knowledge so as to suit the particular requirements of their application context. Because tacit knowledge is difficult to write down or formalise, it is personal knowledge, it is practical, and it is context-specific.

8.4 MANAGING STAKEHOLDERS' KNOWLEDGE

In this study, 87% (40 of the 46) of the interviewees stated that managing stakeholders' knowledge, in particular capturing and sharing stakeholder's knowledge is most important challenge their organisations face. This may be due to an organisations limited control over behaviours of stakeholders and certain stakeholders could simply have irreconcilable differences with one another based on ethical, religious, cultural, social or other issues. When the unique knowledge of various stakeholders is pooled and used to solve corporate problems, however, new practices and strategies emerge that benefit all constituencies – just as entrepreneurship is recognised as the source of economic progress. It is evident from the above result that managing stakeholders' knowledge is one of the most important challenges for the KSA construction organisations.

For instance, implementing BIM, social network, or sustainability issues requires the recognition of a wide range of stakeholders, including secondary ones that are not directly involved in a market relationship but can still greatly affect a company's business. Stakeholder ambiguity is caused when key stakeholders often have disparate goals, demands and opinions, they can easily interpret the same situation differently, especially when the information and knowledge necessary to make informed decisions is limited. Hence, managing stakeholder's knowledge is important challenges for KSA construction organisations.

8.5 CULTURAL ISSUES

In this study, 83% (38 of the 46) of the interviewees noted that national and organisational cultural issue is another key challenge their organisations are facing in managing knowledge. Organisation culture and leadership forms the foundation for successful KM implementation (Kim, et al., 2003). For instance, a culture of knowledge sharing has to be formed to transform the behaviours and attitudes of individuals working in the organisation as well as to cut down barriers (Bolisani and Handzic, 2014). Therefore, it is necessary to increase awareness of the advantages of KM. Staff and managers are supposed to be well informed about the changes and benefits that KM can offer them as well as their organisation. Although they feel and acknowledge the power of knowledge, they have to believe in the power of sharing knowledge (Bolisani and Handzic, 2014).

Arif et al. (2015) argued national culture as one of the major barriers to effective KM practices. However, Magnier-Watanabe and Senoo (2008) found organisational

characteristics to be a stronger prescriptive factor in KM compared to national culture. De Long and Fahey (2000) suggested four ways in which culture affects the behaviours central to knowledge creation, sharing and use. First, culture shapes assumptions about what knowledge is and which knowledge is worth managing. Second, culture identifies the relationships between individual and organisational knowledge, determining who is expected to control specific knowledge, who must share it and who can store it. Third, culture shapes the processes by which new knowledge is created, legitimised and distributed in firms. Fourth, culture creates the context for social interaction that determines how knowledge will be used in particular situations.

8.6 LEADERSHIP SUPPORT

In this study, 80% (37 of the 46) of the interviewees stated that leadership is a key success factor for effective implementation of KM initiatives in their organisations. Many interviewees noted that leadership in the KSA construction organisations is of great importance because it deals with knowledge workers, with specialised expertise. Leading them can be done only through intellectual power, conviction, persuasion, and interactive dialog. It requires skills that build confidence and engagement. This is because of a lack of awareness of KM benefits; lack of vision, mission and strategy; and lack of structure for KM initiatives.

Out of the 46 interviewees participated in the current study, thirty interviewees echoed that their organizations have form of vision and mission statements on the use of KM. Sixteen of the interviewees noted that their organisations do not have any forms of vision or mission statements for KM initiatives. This calls for real and urgent attention

in the role of leadership in establishing an infrastructure that can actually bring about change and implement the organisation's mission, vision and strategy with respect to KM in the KSA construction organizations. The importance of expressing the vision to the rest of the organisation is paramount. There is an urgent need for a long-term vision to be incorporated into the corporate strategy of organisations. This is only achievable if the mission towards KM is fully understood in the organisation.

One of the interviewees stated that:

> "If we did something wrong, there is ninety percent chance it will be done again. This is because lessons learnt from mistakes are not captured and shared in a systematic way".

Another interviewees noted that:

> "There is a wealth of knowledge within the company. If you know the right person to speak to and the right question to ask at the right time, then you will certainly get a huge amount of knowledge which is informal in nature".

This observation was also reiterated by another interviewees stated that:

> "Any information or knowledge generated is lost because people just pass information or knowledge on to each other verbally. If somebody has up-skilled their experience and they leave the organisation that leaves a knowledge gap".

The above views of the interviewees indicate that there is lack of an effective strategy to capture key knowledge within the KSA construction organisations. Hansen et al. (1999) discussed the importance of having a strategy for managing an organisation's knowledge and identified several cases where having the wrong strategy or no strategy caused organisations to fail to utilise their knowledge.

Matsumoto et al. (2005) argue that within the architecture, engineering and construction industry, companies recognise they can no longer afford to reinvent the wheel and must learn to better capture the knowledge to improve the quality and effectiveness of the organisation. This seems to suggest that a lack of awareness for KM benefits is prevalent in the KSA construction industry.

It could be inferred that without leadership support and commitment, no KM initiatives will take off in any meaningful way. Leadership in KSA construction organizations need to understand KM as a key business driver rather than as a resource-intensive additional initiative. While introducing KM, a logical sequence should be used to minimise effort and cost, resulting in products or services being used/implemented more quickly. There is an urgent need for improved awareness and understanding of the challenges and significance of knowledge. In order to fill this gap, a training tool for leadership capability building for implementing KM initiatives is being developed.

8.7 ORGANISATIONAL INFRASTRUCTURE ISSUES

In this study, 76% (35 of the 46) of the interviewees noted that the implementation of information and communication technology (ICT) tools to facilitate KM is an issue for

their organisations. In today's knowledge economy, rapid access to knowledge is critical to the success of many organisations. Therefore, appropriate technology is likely to be the single most important factor in leveraging knowledge in organisations. Massingham (2014) asserts that KM tools are able to collect data from various sources and classify, integrate and codify these data. Davenport and Prusak (1998) assert that KM tools are more than information technology it is about the people who add value by transforming static data into meaningful information and knowledge by mixing it with their own experience and interpretations. Therefore, Davenport and Prusak (1998) acknowledge that KM techniques and technologies are mutually dependent.

8.8 SUMMARY

Knowledge in organisations is dynamic in nature and is dependent on social relationships between individuals for its creation, sharing, and use. Managers would continue to strive for productivity, innovation, profitability, and other competitive goals, but they would do so more effectively by harnessing the key knowledge assets.

The key challenges KSA construction organisations face in managing knowledge, as revealed from the study, are: capturing tacit knowledge, managing stakeholders' knowledge, cultural issues, leadership support, and organisational infrastructure issues. The chapter concludes that managing knowledge is an integrated and complex process. This involves social, cultural, financial, and technological considerations. Furthermore, the KSA construction industry needs to work more collaboratively with its stakeholders. There is a need for developing a new co-value creation business models and use of

collaborative knowledge sharing platforms, but also by a need to overcome shared risks and realise long-term outcomes.

More effective knowledge-sharing within and across construction organisations is also required. Business memory is lost as project teams break up toward the end of a project, or when people move on from short term contracts. Opportunities to reflect on lessons which could benefit future projects are missed in the KSA construction industry. Therefore, the KSA professional institutions and construction industry should support and participate in the work of knowledge-sharing groups to address perceived risks from new technologies (e.g. BIM, mobile applications) and processes (e.g. sustainability issues).

This chapter has addressed the fifth research objective of the current study, "to critically appraise and document the main challenges associated with implementing key knowledge management strategies in the KSA construction industry". Therefore, this chapter has answered the fifth research question which is "what key challenges do KSA construction organisations face in implementing knowledge management initiatives?". The next chapter (i.e. Chapter 9) will discusses the role of KM strategies for improved competitiveness on KSA construction organisations.

CHAPTER 9 : THE CONTRIBUTIONS OF KM STRATEGIES ON COMPETITIVENESS

9.1 INTRODUCTION

This chapter discusses the results on the role of KM strategies for improved competitiveness on KSA construction organisations to ascertain "to what extent do KM strategies impact on competitiveness of the KSA construction organisations?" In this study KM strategies contribute to improved competitiveness in four main areas. These are improved cost savings, improved efficiency, improved productivity and improved profitability. The findings are validated and elaborated using the results from the qualitative data from 46 professionals. The findings are also substantiated with the relevant literature. In doing so, this chapter addresses the sixth research question of the current study, which is "to explore the extent to which KM strategies contribute to competitiveness of the KSA construction industry".

9.2 THE CONTRIBUTIONS OF KM STRATEGIES ON COMPETITIVENESS

During the semi-structured interviews in this study, the subject of competitiveness was raised i.e. "explain how the KM strategies contribute to your organisation's present level of competitiveness". This revealed four key areas where KM had improved competitiveness in KSA construction organisations.

Table 9.1: The perceived positive impact of KM strategies on competitiveness

Competitiveness factors	No. of Interviewees cited (N=46)
Cost savings	89%
Improved efficiency	83%
Improved productivity	76%
Improved profitability	65%

9.3 COST SAVINGS

In this study, 89% (41 of the 46) of the interviewees noted that managing knowledge have high positive impact on their improved cost savings. Many of these interviewees noted that their organisations are experiencing cost savings through capturing and sharing best practices and innovative ideas waste reduction and resources efficiency strategies. This suggests that capturing, sharing and re-using best practices, organisations can reduce cycle time, reduce defects, reduce re-work, reduce material consumption, and reduce process inefficiencies. This in turn could contribute to improved costs savings.

For instance, one of the interviewees noted that:

> "To raise awareness and understanding of our key waste management initiatives, we produced a waste management related best and worst practices guidance documents, and conducted internal training sessions

> and workshops on waste management related policies, issues, management, and other topics. Over a period of time this in turn reduced our operating costs through reduced waste, reduced waste disposable bills, and improved productivity".

Analysis of the above statement reveals that the KSA construction organisations are achieving cost savings through KM strategies. This is understandable because, through capturing and sharing best practices, lessons learned, and fresh new ideas from the internal and external sources could provide critical knowledge to 'knowledge workers' efficiently and effectively to reduce cost and time while improving the quality of performance (Liebowitz, 1999). Therefore, the current study results clearly suggest that managing knowledge have a very high level of positive impact on improved cost savings.

9.4 IMPROVED EFFICIENCY

In this study, 83% (38 of the 46) of the interviewees noted that managing knowledge have high positive impact on their improved efficiency. To produce high-quality products, to deliver impeccable service and to keep abreast of technological development organisations require skilled employees. They need to hire employees who are able to share knowledge and develop firm-specific competencies. Without skilled employees firms cannot develop core competencies (Leonard-Barton, 1992). The core competence of the organisation lies in the knowledge and skills of its people. Basic codified systems do not create competitive advantage. It is the skills and abilities of people that dictate the future of the organisation.

It is apparent from the above results that systematic mapping, capturing and sharing of knowledge associated have a high positive impact on improved efficiency. Improved interaction and iteration between knowledge workers, augmented by technology such as BIM, mobile apps, computer conferencing, effectively amplifies knowledge from being tacit and individual into a form that is more widely used throughout the organisation on an ongoing basis (Skyrme and Amidon, 1997). Therefore, organisations can improve their efficiency significantly. As Liebowitz (1999) states, that an active and dynamic implementation of KM practices is critical to enable performance, problem-solving and decision-making in knowledge intensive organisations.

Ulrick (1997) also suggested that organisations need to be able to capture the tacit knowledge of its employees and to do this it is argued that the management needs to involve and engage employees fully in the activities of the organisation. Furthermore, Ulrick (1998) argues that it is increasingly being recognised that the only competitive weapon an organisation really has is its ability to organise work better than their rivals. Pfeffer (1994) also supports this line of argument by claiming that competitiveness comes from managing people effectively and that competitiveness will be sustainable because the causes of the success will not be highly visible or transparent and this will make the advantage very difficult to copy.

9.5 IMPROVED PRODUCTIVITY

In this study, 76% (33 of the 46) of the interviewees noted that managing knowledge have high positive impact on their improved productivity. Catell et al. (2003) noted that productivity is about getting the best value from all inputs across the whole value chain

and for this, there needs to be sustained improvement in leadership, culture and processes. This is because of improved productivity per person and improved project success rates i.e. the number of projects completed and delivered had increased with the same number of employees in the past two years.

Sveiby (1997) noted that companies are realising that the basis for their competitiveness is their knowledge base and this knowledge should be widely distributed throughout the organisation. Knowledge resides in many different places such as people's heads, databases and filing cabinets which are distributed across the organisation. All too often, one part of an organisation repeats the work of another part simply because it is difficult to keep track of, and make use of, knowledge in other parts of the company. Organisations that reap the highest benefits are the ones that realise that knowledge is a valuable source in maintaining a competitive advantage.

According to Ulrick (1997), a number of capabilities are needed by an organisation if it is to develop competitive advantage and achieve success in a competitive context. It is necessary to develop a shared mindset which will enable the development of a unique identity for the organisation and it is this shared mindset which is an enabler for the creation of wealth for the organisation.

9.6 IMPROVED PROFITABILITY

In this study, 65% (30 of the 46) of the interviewees noted that managing knowledge have high positive impact on their improved profitability. The current study results suggests that identifying, capturing and sharing best practices, mentoring employees,

sharing knowledge could enhance employee satisfaction level. Von Krogh et al. (1994) suggested that the two basic strategies for organisations are survival and advancement. Survival strategies are attempting to gain success in the organisation's known business environment, and advancement strategies are directed towards securing future profitability. In this current study, one of the interviewees noted that survival strategies relied on the effective utilisation of existing assets and resources, including the existing level of knowledge in the organisation.

For knowledge to be considered as a source of competitiveness it must pass the "tests of value". He further noted that the value test would be satisfied if the knowledge makes a valuable contribution to the capability of the organisation to capitalise on existing opportunities and, in the short run, this contribution would consist primarily of explicit knowledge being transferred from outside the organisation, or within the organisation and used to improve organisational productivity and profitability.

Thompson and Strickland (2001), and Long and Vickers-Koch (1995) noted that organisations need to gain their competitiveness by linking the processes in their organisation which give them strength in delivery of products or services; and that this should be based on capabilities coming from the entire value chain. A by-product of this concentration on the processes in the organisation can help to break down the functional barriers and foster the development of cross functional teams and structures which provides opportunities for knowledge and skills of individuals to be used (Pfeffer, 1994), and opportunities for employees to pool their ideas to come up with even better and more creative solutions to problems (Foley, 2000).

In times economic uncertainty, managing the factors that drive business value becomes especially significant. Ultimately, such management may lead to business success or failure. Increasing number of organisations have been measuring the customer loyalty, employee satisfaction, and environmental impacts and other performance areas that are not financial, but when they believe ultimately affect profitability (Rikowski, 2007).

Overall, from the above discussions it is clear that, the benefits of managing knowledge include: fostering innovation by encouraging the free flow of ideas; improving customer service by minimising response time; boosting revenues by getting products and services to market faster; enhancing employee retention rates by recognising the value of employees and rewarding them for it; streamlining operations and reducing costs by eliminating redundant processes.

9.7 SUMMARY

In today's fast-paced economy, an organisation's knowledge base is quickly becoming its only sustainable competitiveness. As such, this resource must be captured, protected, cultivated and shared amongst organisational members. Increasingly, however, competitiveness is to be gained by making individual knowledge available within organisation and transforming it into organisational knowledge. Organisational knowledge complements individual's knowledge, making it stronger and broader. The full utilisation of an organisation's knowledge base, coupled with the potential of individual's skills, competencies, thoughts, innovations, and ideas, will enable an organisation to compete more effectively in the future.

In this study KM strategies contribute to improved competitiveness in four main areas. These are improved cost savings, improved efficiency, improved productivity and improved profitability. The organisation path to doing well by doing good has become the smart way to do business – only if organisations have the right knowledge and competencies required for it. Therefore, managing knowledge assets is essential to improve competitiveness in terms of economic (e.g. cost savings), social (e.g. employee relation), and environmental (e.g. waste reduction) value.

The following were thought to be a prerequisite in establishing KM for improved competitiveness:

- Ensure a strong link to the business imperatives: a KM strategy and process should visibly support business objectives. There should be a clear understanding of what knowledge is vital for an organisation's future prosperity.
- Assign a knowledge leader: a knowledge champion should be chosen with the support from top management. It should not be made a separate portfolio but the knowledge champion should encourage development of KM qualities in individuals throughout the organisation.
- Develop a system of organisational knowledge processes: a framework and process for identifying, capturing and diffusing important knowledge in a structured way must be developed. Sources of information or knowledge carriers must be easily identifiable and accessible, whether in database or human brains.
- Cultivate a knowledge capture and sharing culture: an organisational culture that empowers individuals supports networking and encourages knowledge capture and sharing across the enterprise and geographic boundaries. By involving employees from the beginning of the initiatives, the opportunity is created for

them to develop an understanding of the importance as well as an increase in acceptance of such initiatives.

- Develop techniques and a technological infrastructure: organisations need to have an infrastructure that supports collaboration of knowledge-enabled workers as well as explicit knowledge databases. Encouraging knowledge capture through informal processes e.g. by developing communities of practice in which the members capture and share what they know about a specific discipline.
- Provide training: to enable an organisation's personnel to appreciate the importance of KM and be aware of how this can be achieved from the point of view of their particular work.

The above discussions have addressed the fifth objective of this current study which is "to explore the extent to which knowledge management strategies contribute to competitiveness of the Kingdom of Saudi Arabia construction industry.", and the sixth research question - "to what extent do KM strategies impact on competitiveness of the KSA construction industry?"

CHAPTER 10 : A FRAMEWORK FOR MANAGING KNOWLEDGE IN THE KSA CONSTRUCTION ORGANISATIONS

10.1 INTRODUCTION

This chapter presents a framework for managing knowledge in the KSA construction organisations. The findings from the previous stages of this research study were taken into consideration in the development of the framework. The developed framework provides broad guidance for the integration of KM initiatives into day-to-day operational decisions. This framework is intended to offer guidance for the successful implementation of KM programs. In doing so, Chapter 10 addresses the sixth research objective of this current study, which is "to develop and validate KM framework for the benefit of KSA construction organisations."

10.2 RATIONALE FOR THE KNOWLEDGE MANAGEMENT FRAMEWORK

Holsapple and Joshi (2002) noted the reasons why a KM framework is important include:

- To provide a more holistic view of KM. It enables people to look at it and consider all its facets from a broader perspective. In addition, it helps people to reflect on and conceptualise KM in an integrative manner.
- It facilitates the communication of KM strategy across an organisation. A framework provides a common vocabulary and language for people. It helps managers to communicate their KM vision to their employees and it helps the discourse of KM implementation issues in the organisation.

- It helps to determine the scope of KM initiatives. This is because a framework sets the virtual boundary of KM for organisations to employ as it outlines the phases and activities to be addressed as well as the elements and influences to be considered.
- As an assessment tool, it helps managers and practitioners to determine if they have considered all the relevant issues pertaining to KM implementation. It helps managers to cover and address key issues of KM which might otherwise be overlooked.
- Finally, a framework facilitates the management of the implementation process and helps to coordinate organisational efforts in a more systematic and controlled manner.

To date, different approaches have been employed to construct frameworks. Some are depicted in the form of a diagram or visual representation, while others use a series of 'steps to be followed' (Yusof and Aspinwall, 2000). Based on these approaches, KM frameworks can be classified as 'system', 'step' or 'hybrid' (Wong, 2004). The first describes and characterises KM in the form of a graphical representation with the aim of providing a systemic and holistic perspective on KM implementation. Key constructs and elements are put together to provide both an overview of their relationship and a means of fully understanding the key issues in a unified manner. The step approach frameworks, on the other hand, provide a series of steps or procedures to be followed in the KM implementation process.

10.3 PROPOSED FRAMEWORK FOR MANAGING KNOWLEDGE

The KM framework was developed through a thorough review of literature on KM frameworks and through data obtained from 46 professionals in 30 organisations in the KSA construction industry. The proposed framework as shown in Figure 10.1 consists of 3 stages: inputs, processes and outputs. The inputs of the framework include the key drivers for managing knowledge. These inputs guide the decisions of knowledge managers and the processes that the organisation undertakes to improve its KM agenda. After evaluating the inputs and likely effects on competitiveness factors, managers can develop the appropriate processes to address KM initiatives. Also, included in the framework are continual feedback loops that decision makers can use to evaluate and improve organisation KM strategy.

- **INPUTS**

Inputs are considered as drivers for implementing KM initiatives. Most of the time organisations evaluate KM initiatives as "ineffective", when the KM initiatives were implemented without fully understanding the drivers and the objectives that had to be met at the outset. Before embarking on a KM journey, organisations therefore have to understand what it is that they would like to achieve with KM and what value it needs to add to their organisation (Renukappa, et al., 2017). Therefore, understanding drivers for managing knowledge is critical. This study revealed five drivers for managing knowledge in the KSA construction organisations. They are: to improve cost savings, to capture key knowledge assets, to sustain staff skills, to accelerate knowledge flow, and to gain sustainable competitive advantage (see Chapter 5). It should be noted that for some organisations the key drivers may be all or a combination of some of these drivers.

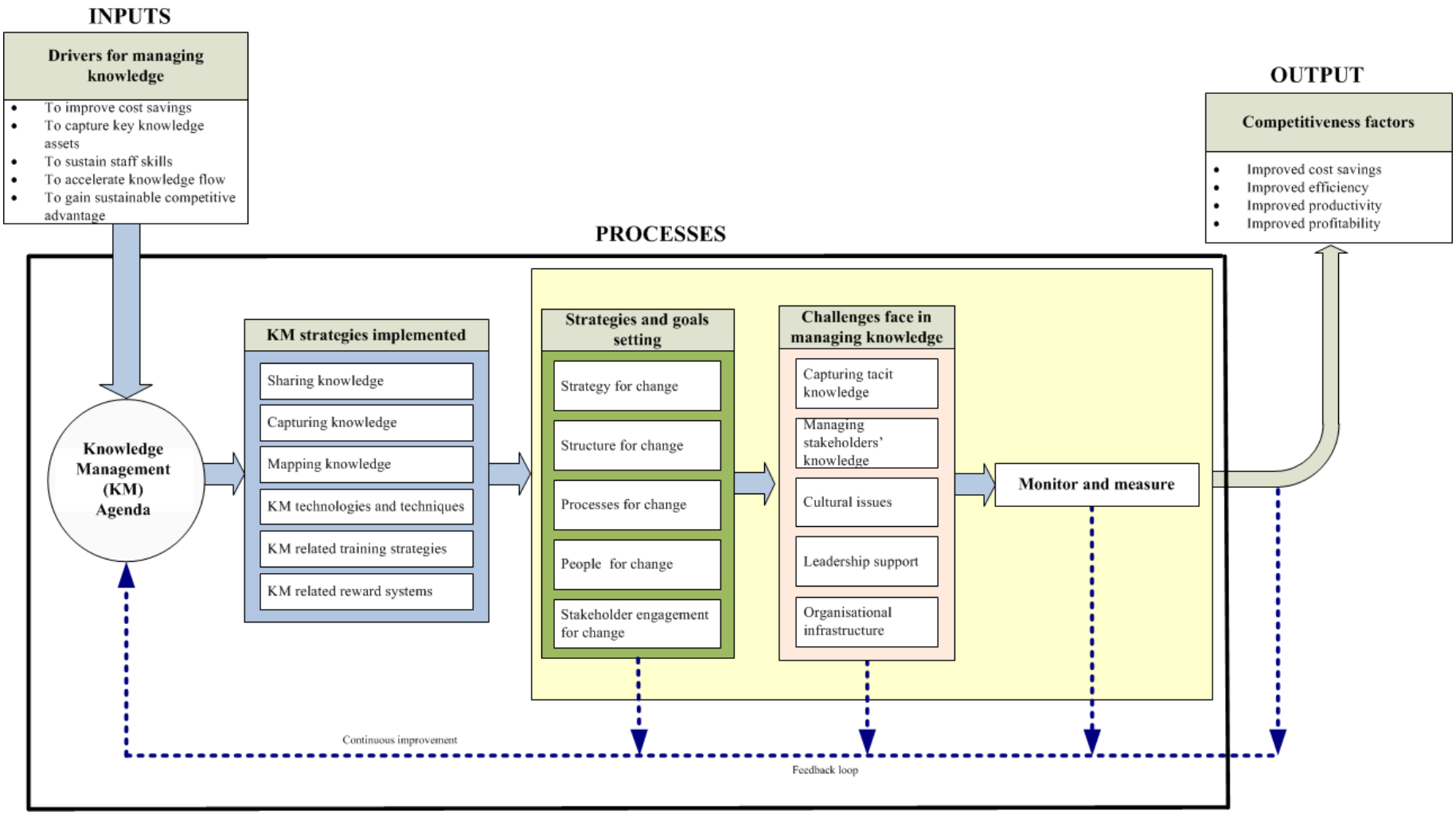

Figure 10.1: A framework for managing knowledge in the KSA construction organisations

- **PROCESSES**

This is the second stage of the framework. This stage consists of five sub-processes. They are: developing KM agenda, KM strategies implemented, strategies and goals setting, challenges face in managing knowledge, and monitor and measure KM implementation performance. This study revealed three initiatives related to managing knowledge that have been implemented. They are: sharing, capturing and mapping knowledge. Most often implemented KM initiatives include: identification of internal and external sources of knowledge assets, capturing knowledge from the internal and external sources, reward systems, a specific training program for promoting initiatives related to sharing, capturing, and mapping knowledge, and creation of new job roles and positions for sharing, capturing and mapping knowledge (see Chapter 6 and 7).

For an organisation to fully utilise knowledge assets management must promote and support the creation, sharing and use of knowledge among employees and discourage knowledge hoarding. Successful organisations have employees who consistently collaborate, cooperate and communicate both formally and informally. The organisation must take the initiative to change their environment to one that is conducive to sharing knowledge.

The current study results suggest that organisations are increasingly recognising the need of capturing knowledge from employees, capturing knowledge from boundary management (e.g. from customers/clients and suppliers), capturing process knowledge (e.g. capture of best and worst practices stories of new technologies) and capturing knowledge from published documents (e.g. reviewing professional literature) could increase innovation.

To improve organisational performance, executives have to recognise and better understand the key knowledge assets available within and across organisations. Hunt (2003) suggests that knowledge map may provide a possible answer to the challenges of how to locate new forms of useful knowledge, and the flow of knowledge within and across organisations, including new directions for training employees, stimulating and facilitating knowledge sharing, and establishing useful links with external stakeholders.

The current study findings do suggest that capturing tacit knowledge, managing stakeholders' knowledge, cultural issues, leadership support and organisational infrastructure are key factors for successfully managing knowledge (See Chapter 8).

This is the third and final stage of the proposed framework. The outputs are in the form of competitiveness variables. KM initiatives could often improve innovation and enhance competitiveness in several ways. For most organisations, the ultimate focus of KM strategies and programmes must be long-term profitability, improved cost savings, improved efficiency and productivity.

10.4 VALIDATION OF THE FRAMEWORK

Validation is defined as an assessment of whether a framework is in congruence with reality (Brink, 2003). The developed framework was validated with 6 senior professionals from 4 KSA construction organisations. The professionals had over 10 years of work experience in KM initiatives implementation. In this study, during face-to-face interview, the interviewees were asked about the comprehensiveness of the developed framework. Most of the interviewees asserted that the framework has a very

high degree of comprehensiveness and in terms of areas covered; the developed framework has a very high level KM issues. Interviewees were of the view that it has high level coverage of capturing, sharing and mapping variables. Furthermore, the interviewees were asked if they think the framework would help their organisations to manage knowledge and response from all interviewees was very positive. They considered a framework will help their organisations to identify key drivers, key KM initiatives and benefits of implementing KM initiatives. Overall, most of the interviewees recommended that the developed framework can be used for managing knowledge to improve competitiveness. The framework can be further tested and revised in both academic and business context. Overall, framework and its validation attempted to address objective sixth of this research study.

10.5 SUMMARY

This chapter has discussed the development of a framework for managing knowledge for the benefit of organisations. It can aid managers in operationalising a KM strategy and tying it to the specific actions that will improve competitiveness. The findings from the previous stages of the research study and aspects from critical review of literature were taken into consideration in the development of the framework. The developed framework consists of 3 stages: inputs, processes and outputs. The developed and validated framework provides broader idea for the integration of KM initiatives into day-to-day management decisions. The framework can help managers to systematically think through drivers for managing knowledge to competitiveness. In doing so, this chapter addressed objective 8 of the current study, which is “to develop a framework for managing knowledge for the benefit of KSA construction organisations”.

CHAPTER 11 : CONCLUSIONS AND RECOMMENDATIONS

11.1 INTRODUCTION

This chapter discusses the aim, objectives and research questions of the study. In doing so, it presents the finding and also provides conclusions and recommendations. The key findings are discussed with respect to the objectives of the study. Prior to that, the research process is discussed.

11.2 RESEARCH PROCESS

The overall aim of this research is to investigate how the KSA construction organisations implementing KM strategies en-route to organisational competitiveness.

In order to achieve the above aim the following objectives were identified.

1. To explore and document the key drivers for implementing knowledge management strategies in the KSA construction industry
2. To investigate and document the key knowledge management strategies that are currently being implemented in the KSA construction industry.
3. To critically appraise and document the key knowledge management related training strategies adopted in the KSA construction organisations.
4. To critically appraise and document the main challenges associated with implementing key knowledge management strategies in the KSA construction industry.

5. To explore the extent to which knowledge management strategies contribute to competitiveness of the KSA construction industry.
6. To develop and validate an integrated framework for managing knowledge for the benefit of KSA construction organisations.

The qualitative research approach was adopted to collect and analyse data from 46 professionals. Participants in the study included directors, advisors and managers. responsible for KM initiatives in their organisations. Interviews were audio recorded and then transcribed. As part of the analysis of the interviews, content analysis was employed.

11.3 KEY FINDINGS

Objective 1: To explore and document the key drivers for implementing knowledge management strategies in the KSA construction industry

Research question 1: What are the key drivers that have fuelled the need for managing knowledge within the KSA construction organisations?

This study revealed that the single most important driver for managing knowledge is to improve cost savings. This is followed to capture key knowledge assets, to sustain staff skills, to accelerate knowledge flow, and to gain sustainable competitive advantage. A complex mix of political, economic, social and environmental forces drives KSA construction organisations to manage knowledge. Therefore, understanding the drivers for implementing KM strategies is important. This understanding could assist decision makers to develop KM strategies based on the drivers.

Objective 2: To investigate and document the key knowledge management strategies that are currently being implemented in the Kingdom of Saudi Arabia construction industry.

Research question 2: What are the key KM strategies currently being implemented in the KSA construction organisations?

Three key KM strategies have been used in the KSA construction organisations. They are: sharing, capturing, and mapping knowledge. This study results suggests that the extent of implementation of initiatives related to sharing knowledge is relatively high when compared to capturing and mapping of knowledge. Strategically, tacit knowledge capture is critical when an issue of knowledge continuity arises or due to other concerns with groups and the organisation as a whole. The KSA construction organisations can benefit from developing a knowledge map or taxonomy that describes the knowledge critical for operations, skills required to perform the tasks, and individuals currently performing these critical tasks. However, it is evident from the current study results that knowledge mapping strategies is under implemented across the KSA construction organisations.

Objective 3: To critically appraise and document the key knowledge management related training strategies adopted in the KSA construction organisations.

Research question 3: What are the current KM specific training strategies adopted in the KSA construction organisations?

Knowledge has now become widely recognised and accepted as a valuable organisational resource in the business world. The KM programmes have been used in the KSA construction organisations at different levels of implementation. The study revealed that current training programmes specifically designed for KM in the KSA construction industry include: communication skills, time management skills, training on-the-job, mentoring, leadership skills and client management.

Research question 4: What are the future KM specific training strategies adopted in the KSA construction organisations?

Training is an essential process that develops three dimensions of the knowledge of employees of the organisation that are competence, knowledge and exploitative knowledge. The KSA construction industry is focused on their current as well as future training provision programmes for the management and enhancement of organisational knowledge. the nature of future training for KM include: capturing knowledge, sharing knowledge, creating culture for KM, knowledge mapping, and efficient use of KM tools.

Objective 4: To critically appraise and document the main challenges associated with implementing key knowledge management strategies in the Kingdom of Saudi Arabia construction industry.

Research question 5: **What key challenges do KSA construction organisations face in implementing knowledge management initiatives?**

Knowledge in organisations is dynamic in nature and is dependent on social relationships between individuals for its creation, sharing, and use. Managers would continue to strive for productivity, innovation, profitability, and other competitive goals, but they would do so more effectively by harnessing the key knowledge assets. The key challenges KSA construction organisations face in managing knowledge, as revealed from the study, are: capturing tacit knowledge, managing stakeholders' knowledge, cultural issues, leadership support, and organisational infrastructure issues.

Objective 5: To explore the extent to which knowledge management strategies contribute to competitiveness of the Kingdom of Saudi Arabia construction industry.

Research question 6: To what extent do knowledge management strategies impact on competitiveness of the Kingdom of Saudi Arabia construction industry?

In today's fast-paced economy, an organisation's knowledge base is quickly becoming its only sustainable competitiveness. As such, this resource must be captured, protected, cultivated and shared amongst organisational members. Increasingly, however, competitiveness is to be gained by making individual knowledge available within organisation and transforming it into organisational knowledge. In this study KM strategies contribute to improved competitiveness in four main areas. These are improved cost savings, improved efficiency, improved productivity and improved profitability.

Research Objective 6: To develop and validate a framework for managing knowledge for the benefit of KSA construction organisations.

A KM framework for the benefit of KSA construction organisations was developed and validated. The findings from the previous stages of this research study were taken into consideration in the development of the framework. The developed framework provides broad guidance for the integration of KM initiatives into day-to-day operational decisions. This framework is intended to offer guidance for the successful implementation of KM programs. The framework can be further tested and revised in both business and academic environment.

11.4 RECOMMENDATIONS

Recommendations for decision makers

- To improve organisational performance, KSA construction managers have to recognise and better understand the key knowledge assets available within the value chain. It is critical for organisations to understand the key drivers before

implementing KM initiatives. If organisations do not fully comprehend what drives the need for managing knowledge, they may fall into the trap of creating an inefficient KM strategy and operational plans.

- A complex mix of political, economic, social and environmental forces drives KSA construction organisations to manage knowledge. Therefore, understanding the drivers for implementing KM strategies is important. This understanding could assist decision makers to develop KM strategies based on the drivers.
- Knowledge is an organisations most critical asset and a source of lasting competitive advantage. The construction industry is one of the critical industries that operates in an information-rich environment, which relies heavily on knowledge as one of the strategic resources to ensure the tasks associated with the domain can be performed effectively and efficiently by the project team members.
- Taken together, the impact of management commitment and leadership, KM policies, structures, reward systems, training programmes and performance reporting are key factors in successful implementation of KM strategies in the KSA construction organisations.
- To gain competitive advantage, it is necessary for KSA construction industry to recognise and use a blend of ICT and non-ICT based KM tools. It is advisable to use conventional, simple, low cost, and easy to use with minimum training needs KM techniques and technologies such as mentoring and on-the-job training strategies.
- Knowledge in organisations is dynamic in nature and is dependent on social relationships between individuals for its creation, sharing, and use. Managers would continue to strive for productivity, innovation, profitability, and other competitive goals, but they would do so more effectively by harnessing the key knowledge assets.
- Managing knowledge is an integrated and complex process. This involves social, cultural, financial, and technological considerations. Furthermore, the KSA construction industry needs to work more collaboratively with its stakeholders. There is a need for developing a new co-value creation business

models and use of collaborative knowledge sharing platforms, but also by a need to overcome shared risks and realise long-term outcomes.

- More effective knowledge-sharing within and across construction organisations is also required. Business memory is lost as project teams break up toward the end of a project, or when people move on from short term contracts. Opportunities to reflect on lessons which could benefit future projects are missed in the KSA construction industry. Therefore, the KSA professional institutions and construction industry should support and participate in the work of knowledge-sharing groups to address perceived risks from new technologies (e.g. BIM, mobile applications) and processes (e.g. sustainability issues).

Recommendations for KSA construction sector

- To avoid brain-drain, KSA construction organisations need to develop and implement effective knowledge capture strategies aligned with their overall KM strategies. Some of the knowledge capture strategies include: retaining the best people, mentoring and coaching, sharing best practices, sharing lessons learnt and documentation.

- Strategically, tacit knowledge capture is critical when an issue of knowledge continuity arises or due to other concerns with groups and the organisation as a whole. Employee's especially new hires are facing steeper, longer learning curves at the same time that construction organisations are looking for faster revenues and higher productivity. Therefore, there is a great need to develop systems that capture tacit knowledge more effectively in the KSA construction organisations.

- The KSA construction organisations can benefit from developing a knowledge map or taxonomy that describes the knowledge critical for operations, skills required to perform the tasks, and individuals currently performing these critical tasks. However, it is evident from the current study results that knowledge

mapping strategies is under implemented across the KSA construction organisations. This could be due to the fact that mapping of knowledge is in its infancy in the construction organisations. Therefore, there is an urgent need for developing and deploying industry wide knowledge mapping awareness programmes to improve understanding on the concept and benefits of mapping knowledge.

- The organisation path to doing well by doing good has become the smart way to do business – only if organisations have the right knowledge and competencies required for it. Therefore, managing knowledge assets is essential to improve competitiveness in terms of economic (e.g. cost savings), social (e.g. employee relation), and environmental (e.g. waste reduction) value. The following were thought to be a prerequisite in establishing KM for improved competitiveness:
    - Ensure a strong link to the business imperatives: a KM strategy and process should visibly support business objectives. There should be a clear understanding of what knowledge is vital for an organisation's future prosperity.
    - Assign a knowledge leader: a knowledge champion should be chosen with the support from top management. It should not be made a separate portfolio but the knowledge champion should encourage development of KM qualities in individuals throughout the organisation.
    - Develop a system of organisational knowledge processes: a framework and process for identifying, capturing and diffusing important knowledge in a structured way must be developed. Sources of information or knowledge carriers must be easily identifiable and accessible, whether in database or human brains.

- Cultivate a knowledge capture and sharing culture: an organisational culture that empowers individuals supports networking and encourages knowledge capture and sharing across the enterprise and geographic boundaries. By involving employees from the beginning of the initiatives, the opportunity is created for them to develop an understanding of the importance as well as an increase in acceptance of such initiatives.
- Develop techniques and a technological infrastructure: organisations need to have an infrastructure that supports collaboration of knowledge-enabled workers as well as explicit knowledge databases. Encouraging knowledge capture through informal processes e.g. by developing communities of practice in which the members capture and share what they know about a specific discipline.
- Provide training: to enable an organisation's personnel to appreciate the importance of KM and be aware of how this can be achieved from the point of view of their particular work.

Recommendations for academics and researchers

- The practical implication of this research is that the KM should not only focus on the specific knowledge to be captured, shared, mapped and transferred between individuals but should also address strategic concerns at group and organisational levels. Therefore, construction organisations in the KSA must also hone in on these basic modern day truths and implement KM training programmes which focus both on tacit and explicit knowledge.

- Training is an essential process that develops three dimensions of the knowledge of employees of the organisation that are competence, knowledge and exploitative knowledge. The study suggests that for effective implementation of KM strategies, there is an urgent need for KSA construction industry to develop and deploy appropriate KM related management training programme(s). The challenge, therefore, is for business schools and training consultants to bridge the wide gap in the market place. Continuing Professional Development (CPD) programme(s) and executive training programme(s) are valuable ways to raise KM awareness.
- Leadership plays an important role in breaking down barriers in achieving KM goals – barriers such as tunnel vision, past practice, old ideas and cultural frameworks that together combine to discourage new visions of the future. Leadership is about preparing organisation with a KM vision and values that resonate with the team, employees, and key stakeholders. Therefore, there is an urgent need to develop and deliver a bespoke training framework to address, improve and measure the effectiveness of leadership skills for implementing KM related change initiatives in the KSA construction industry.

11.5 FUTURE WORK

This research study has revealed a number of areas for further research and development including the following areas:

- It would be worthwhile to explore the differences between micro enterprises (organisation employee size less than 10), small and medium-sized enterprises' (organisation employee size less than 250) and large organisations (organisation

employee size more than 250) approach to managing knowledge in the KSA construction organisations.

- Future research is required to explore KM related training programmes for: capturing, mapping, sharing, effective use of KM tools and creating an appropriate culture for KM. Also, a theoretical conceptual framework could be developed to implement KM training strategies holistically which feeds into organizational strategy for improved competitiveness.
- Given that the research reported in this thesis is largely exploratory by nature, the results presented here are only tentative and of limited value for the purpose of generalisability. Furthermore, findings of this research are limited to the KSA construction industry context only, as such, the level of generalisability outside this context may be very limited. However, Gulf Cooperation Council (GCC) countries that is similar to the study area, and hence the findings could apply to them in some way.

REFERENCES

Agarwala, T. (2006), 'Innovative Human Resource Practices and Organizational Commitment: An Empirical Investigation,' International Journal of Human Resource Management, 14, 175–197.

Ahmad, H. and An, M (2008) Knowledge management implementation in construction projects: a KM model for Knowledge Creation, Collection and Updating, *International Journal of Project Organisation and Management*, Vol. 11, No. 2, pp. 133-166.

Alavi, M. and Leidner, D. (1999). *Knowledge Management Systems: Emerging Views and Practices from the Field.* Proceedings of the 32nd Annual Hawaii International Conference on System Sciences: Hicss-32, Hawaii International Conference on System Sciences// Proceedings.

Alavi, M. and Leidner, D. E. (2001) Knowledge management and knowledge management systems: conceptual foundations and research issues, *MIS Quarterly*, Vol. 25, No. 1, pp. 107-136.

Alavi, M., Kayworth, T.R. and Leidner, D. (2006), "An empirical examination of the influence of organizational culture on knowledge management practices", Journal of Management Information Systems, Vol. 22 No. 3, pp. 191-224.

Al-bahussin, S. and El-garaihy, W. (2013), "The Impact of Human Resource Management Practices, Organisational Culture, Organisational Innovation and Knowledge Management on organisational Performance in Large Saudi Organisations: Structural Equation Modeling With Conceptual Framework", *International Journal of Business and Management*, Vol. 8, No.22.

Algorta, M., & Zeballos, F. (2011). Human resource and knowledge management: Best practices identification. *Measuring Business Excellence, 15*(4), 71–80. doi:10.1108/13683041111184125.

AL-Hussain, A. Z., Murphree Jr, E. L., and Bixler, C. H. (2012) Barriers to Knowledge Management in Saudi Arabia, *Journal of Knowledge Globalization*, 5(1), 47-75.

Allen, T. D., Poteet, M. L., Eby, L. T., Lentz, E. and Lima, L. (2004). Career benefits associated with mentoring for protégés: A meta-analysis. *Journal of Applied Psychology,* 89, 127-136.

Alotaibi, F., Yusoff, R.Z. and R. Islam, (2013) Relationship between total quality management practices and contractors competitiveness, *American Journal of Applied Sciences*, 10(3), 247-252.

Alotaibi, H., Crowder, R. and Wills, G. (2013), "Investigating Factors for Knowledge Sharing Using Web Technologies", *Proceedings of the 13th International Conference on Knowledge Management and Knowledge Technologies*, Article No. 32, New York.

Amaratunga, D., Baldry, D., Sarshar, M., and Newton, R. (2002) Quantitative and qualitative research in the built environment: Application of "mixed'' research approach, Work Study, 51(1), 117-131.

Andreeva, T., and Kianto, A. (2012). "Does knowledge management really matter? Linking knowledge management practices, competitiveness and economic performance." *Journal of knowledge management*, Vol. 16, No. 4, pp.617-636.

Andriessen, D. (2004). Intellectual Capital Valuation & Measurement: State of the Art. *Journal of Intellectual Capital*, 2, 230–242.

Argote, L. (2012), *Organisational Learning, Creating Retaining, and Transferring Knowledge*, London: Kluwer Academic Publishers.

Argyris, C. and Schon, D. (1978), Organisational learning: A theory of action perspective, Addison-Wesley Publishing Company, Reading.

Argyris, C. and Schon, D.A. (1996), Organisational learning II: theory, method, and practice, Addison-Wesley Publishing Company, Reading.

Arif, M., Mohammed, A. and Gupta, A. (2015). Understanding knowledge sharing in the Jordanian construction industry. *Construction Innovation*, 15(3), 333-354.

Armstrong, M. (1996). *A Handbook of Personnel Management*, London, UK: Kogan Page.

Assudani, R. (2005), "Catching the chameleon: understanding the elusive term knowledge", Journal of Knowledge Management, Vol. 9 No. 2, pp. 31-44.

Bachnik, K. (2011). Knowledge management in the light of breakthrough information–communication technologies and the accompanying social trends. In Poskrobko, B.(Ed.), Sustainable economy based on knowledge. Białystok: 297–309.

Bahra, N. (2001). Competitive Knowledge Management, Palgrave, London.

Baldwin, T. T., Magjuka, R. J. and Loher, B. T. (1991). The perils of participation: effects of choice of training on trainee motivation and learning. *Personnel Psychology*, 44, 51-66.

Batra, S. (2014), "Big data analytics and its reflections on the DIKW hierarchy", Review of Management,Vol. 4 Nos 1/2, pp. 5-17.

Becerra-Fernandez, I. and Sabherwal, R. (2015), *Knowledge Management: Systems and Process* (Second Edition), NY: Routledge.

Becerra-Fernandez, I., Gonzales, A. and Sabherwal, R. (2004) Knowledge management: Challenges, solutions, and technologies, Pearson Education, New Jersey.

Beckman, S.L., and Barry, M. (2007). Innovation as a learning process: Embedding design thinking. California Management Review, 50(1), 25–56.

Bender, S. and Fish, A. (2000). The transfer of knowledge and the retention of expertise: the continuing need for global assignment. *Journal of Knowledge Management*, 4(2), 125-137.

Benson, J., and Brown, M. (2007), 'Knowledge Workers: What Keeps Them Committed; What Turns Them Away,' Work, Employment and Society, 21, 121–141.

Bernard, H. R., (2006) Research methods in anthropology: Qualitative and quantitative approaches, Alta Mira Press, CA, USA.

Bhandar, M., Pan, L., Tan, B. (2007), "Towards Understanding the Roles of Social Capital in knowledge Integration: A Case Study of a Collaborative IS Project", *Journal of the American Society for Information Science and Technology,* Vol. 58m No. 2, pp. 263-274.

Bhatt, G.D. (2001), "Knowledge management in organizations: examining the interaction between technologies, techniques, and people", Journal of Knowledge Management, Vol. 5 No. 1, pp. 68-75.

Bitkowska, A., Nowacki, R., & Zaleśna, A. (2012). Innovation and knowledge as sources of competitive advantage of enterprises. In Kardas, J.S., & Brodowska-Szewczuk, J. (Ed.), Efficiency in business. Siedlce: Siedlce University of Natural Science and Humanities, 29–47.

Blackler, F. (1995), “Knowledge, knowledge work and organizations: an overview and interpretation”, Organization Studies, Vol. 16 No. 6, pp. 102-146.

Blome, C., Schoenherr, T., & Eckstein, D. (2014). The impact of knowledge transfer and complexity on supply chain flexibility: A knowledge-based view. *International Journal of Production Economics*, 147, 307-316.

Bolisani, E. and Handzic, M. (2014) Advances in Knowledge Management: Celebrating Twenty Years of Research, Springer publisher, London, UK.

Bontis, N. (2001), “Assessing knowledge assets: a review of the models used to measure intellectual capital”, International Journal of Management Reviews, Vol. 3 No. 1, March, pp. 41-60.

Bontis, N., Fearson, M. and Hishon, M. 2003. The e-flow audit: An evolution of knowledge flow within and outside a high-tech firm, Journal of Knowledge Management, 7, 1, 6-19.

Bordeianu, O.M. (2015). The role of knowledge management and knowledge management strategies within learning organisations. *Ecoforum*, 4, 147-154.

Boselie, P. (2010). *Strategic Human Resource Management*. A Balanced Approach, McGraw-Hill Higher Education London.

Bratton, J. and Gold, J. (2010). *Human resource management.* Mahwah, N.J.: Lawrence Erlbaum.

Bray, D. (2007), “Literature Review – Knowledge Management Research at the Organisational Level”, *Social Science Research Network*, June 2007.

Brooking, A. (1996) *Intellectual capital – core asset for the third millennium enterpri*se, International Thompson Business Press, London.

Brooking, A. (1998). *Corporate Memory: Strategies For Knowledge Management*. London, UK: International Thomson Publishing.

Brown, T., & Katz, B. (2009). Change by design: How design thinking transforms organizations and inspires innovation. New York: Harper Business.

Bryant, S. E., & Terborg, J. R. (2008). Impact of peer mentor training on creating and sharing organizational knowledge. *Journal of Managerial Issues*, 20(1), 11-29.

Bryman, A. and Bell, E. (2015). *Business Research Methods*. New York, USA:Oxford University Press.

Bryman, A. and Bell, E. 2015. Business Research Methods, Oxford University Press, London.

Buono, A. and Poulfelt, F. (2005), "Challenges and issues in Knowledge Management*",* *Research in Management Consulting*, Vol. 5, A Volumen in Research in Management Consulting.

Burnett, S., Illingworth, L. and Webster, L., (2004) Knowledge Auditing and Mapping: A Pragmatic Approach, *Knowledge and Process Management*, Vol 11, No. 1, pp 25-37.

Busch, P. (2008), *Tacit Knowledge in Organisational Learning*, New York: IGI Publishing.

Butler, Y. (2000). Knowledge management-If only you knew what you knew. *Australian Library Journal*, 1, 31-42.

Cable, M. and Judge, A. (1997). "Interview Perception of Person-Organisation Fit and Organisational Selection Decisions", *Journal of Applied Psychology*, Vol. 82 (4), pp. 546-561.

Cabrera, E.F., and Cabrera, A. (2005), 'Fostering Knowledge Sharing Through People Management Practices,' International Journal of Human Resource Management, 16, 720–735.

Calantone, R. J., Cavusgil, S. T., and Yushan, Z., (2002) Learning orientation, firm innovation capability, and firm performance, *Industrial Marketing Management*, Vol. 31, No. 6, pp. 515-524.

Campbell, B., Coff, R., & Kryscynski, D. (2012). Rethinking sustained competitive advantage from human capital. Academy of Management Review, 37, 376–395.

Carlile, L. (2002), "Knowledge Management and Training: The Value of Collaboration", *Performance Improvement*, Vol. 41, No. 4.

Carlson, L. Marcu, D. Okurowsk, M. (2001), "Building a Discourse-Tagged Corpus in the Framework of Rhetorical Structure Theory", *SIGDIAL '01 Precedings of the Second SIGDIAL Workshop on Discourse and Dialogue*, Vol. 16, pp. 1-10.

Carrillo, P., and Chinowsky, P. 2006. Exploiting knowledge management: the engineering and construction perspective, ASCE Management in Engineering, 22, 1, 2-10.

Carter, C. and Scarbrough, H. (2001), "Towards a second generation of KM? The people management challenge", *Education and Training*, Vol. 43, No. 4/5, pp. 215-24.

Carterm C. and Scarbrough, H. (2001). "Human resource management and knowledge management: enhancing knowledge sharing in a pharmaceutical company", *International Journal of Human Resource Management*, Vo. 14, No. 6, pp.1027-45.

Casimir, G., Lee, K., & Loon, M. (2012). Knowledge sharing: Influences of trust, commitment and cost. *Journal of Knowledge Management, 16*(5), 740–753.

Cavalieri, S. and Reed, F. (2000), "Designing knowledge generation processes", Knowledge and Innovation, Vol. 1 No. 1, pp. 109-131.

Cavalieri, S. and Seivert, S. (2005), Knowledge Leadership: The Art and Science of Knowledge-based Organization, Elsevier Butterworth-Heinemann, Burlington MA.

Chen, C.-J., & Huang, J.-W. (2009). Strategic human resource practices and innovation performance. The mediating role of knowledge management capacity. *Journal of Business Research*, 62(1), 104-114.

Chen, L. and Fong, P.S., 2015. Evaluation of knowledge management performance: An organic approach. Information & Management, 52(4), pp.431-453. [Online]. [Accessed 1 Feb 2018]. Available at:< https://www.sciencedirect.com/science/article/pii/S0378720615000063>.

Chivu, I., & Popescu, D. (2008). Human resource management in the knowledge management. *Revista Informatica Economica*, 4(48), 54-60.

Choo, W. (2006), *The Knowing Organisation How Organisations Use Information to Construct Meaning, Create knowledge and Make Decision* (Second Edition), New York: Oxford University Press.

CITB. (1988). Survey of supervisory and management training needs in the U.K. *Construction Industry*, 1(2), 1-10.

Clardy, A. (2012). *The Management Training Tool Kit: 35 Exercises to Prepare Managers for the Challenges They Face Every Day*. New York, USA: Pearson Publications.

Clark, S. Coakes, E. and Clarke, S. (2005), "*The Encylooedia of Communities of Practice in Information and Knowledge Management",* PA: Idea Group Inc.

Clegg, S. and Clarke, T. (1999). 'Intelligent Organizations?' in S. R. Clegg, E. Ibarra-

Cohen, L., Manion, L. & Morrison, K. (2007) *Research Methods in Education*. 6th edn. London: Routledge.

Cohen, W. M. and Levinthal, D. A. (1990) Absorptive capacity: A new perspective on learning and innovation, *Administrative Science Quarterly*, 35(1), 128-152.

Collis, J. and Hussey, R. (2003). *Business Research: a practical guide for undergraduate and postgraduate students*. Basingstoke, UK: Palgrave Macmillan publisher.

Collison, C. & Parcell, G. 2001. Learning to fly: Practical lessons from one of the world's leading knowledge companies, Capstone, Oxford.

Cook, S.N. and Brown, J.S. (1999), "Bridging epistemologies: the generative gap between organizational knowledge and organizational knowing", Organizational Science, Vol. 10 No. 4, pp. 382-400.

Cowlin, A and Mailer, C (1990) Managing human resources, London: Edward Arnold.

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. New York, USA: Sage publishing.

Curran, J. and Stanworth, J. (1981). The social dynamics of the small manufacturing enterprises. *Journal of Management Studies*, 18(2), 141-158.

Currie, G. and Kerrin, M. (2003), "Human resource management and knowledge management: enhancing knowledge sharing in a pharmaceutical company", *International Journal of Human Resource Management*, Vol. 14 No. 6, pp. 1027-45.

Currie, G., & Kerrin, M. (2006). Human resource management and knowledge management: enhancing knowledge sharing in a pharmaceutical company. *The International Journal of Human Resource Management*, *14*(6), 1027-1045.

Daft, R.F. (2001) *Organization Theory and Design*, Cincinnati: South-Western

Dalkir, K. (2005), *Knowledge Management in Theory and Practice*, Oxford: Elsevier Butterworth-Heinemann.

Dalkir, K. (2011). *Knowledge Management in Theory and Practice*, Oxford:Elsevier Butterworth-Heinemann.

Davenport, H. (1994), "Saving IT's Soul: Human Centered Information Management", Harvard Business Review, March-April, Vol. 72, No. 2, pp.119-131.

Davenport, T. H. and Prusak, L. (1998) *Working knowledge - How organisations manage what they know*, Harvard business school press, Boston, MA.

Davenport, T. H., (1997) *Information ecology*, Oxford University Press, Oxford, UK.

de Laet, M. and Mol, A. (2000), "The Zimbabwe bush pump: mechanics of a fluid technology", Social Studies of Science, Vol. 30 No. 2, pp. 225-263.

De Long, D. W. and Fahey, L. (2000) Diagnosing cultural barriers to knowledge management. *Academy of Management Executive*, 14(4), 113-128.

DeCenzo, D.A. (2008). *Fundamental of Human Resources Management*. London, UK. Person international publication.

DeMik, J. R. (2007). Coaching, counselling and mentoring: A strategic need in training and development. Retrieved November 15, 2016, from http://files.eric.ed.gov/fulltext/ED504505

Despres, C. and Hiltrop, J-M. (1995), "Human resource management in the knowledge age: current practice and perspectives on the future", *Employee Relations*, Vol. 17, pp. 9-24.

Dixon, N. M., (2000) *Common knowledge: How companies thrive by sharing what they know*, Harvard Business School Press, Boston, MA.

Dries, N. (2013). The psychology of talent management: A review and research agenda. *Human Resource Management Review*, 23(4), 272–285.

Duhon, B. (1998). It's All in our Heads. *Inform*, 12 (8), 8-13.

Earl, M. (2001), "Knowledge management strategies: toward taxonomy", Journal of Management Information Systems, Vol. 18 No. 1, pp. 215-233.

Easterby-Smith, M. (2011), *Handbook of organisational learning and knowledge management*, Chichester: John Wiley.

Economist Intelligence Unit (2005), "Know how Managing Knowledge for Competitive Advantage", The Economist, An Economist Intelligence Unit White Paper. Published in June 2005.

Edvardsson, I. (2007), "HRM and knowledge management", *Employee Relations*, Vol. 30, No. 5, pp. 553-561.

Edvardsson, I. R. (2008). HRM and knowledge management. *Employee Relations*, 30(5), 553–561.

Egbu, C. O., and Robinson, H. S., (2005) *Construction as a Knowledge-Based Industry*, in Anumba, C. J., Egbu, C. O., and Carrillo, P. M., Knowledge Management in Construction, Blackwell Publishing, Oxford.

Egbu, C. O., Hari, S. and Renukappa, S. H. (2005) Knowledge management for sustainable competitiveness in small and medium surveying practices, Structural Survey Journal, 23, 1, 7-21.

Egbu, C., Kurul, E., Quintas, P., Hutchinson, V., Anumba, C. and Ruikar, K. (2003). *Techniques & Technologies for Knowledge Management*, Retrieved November 15, 2016, from http://www.knowledgemanagement.uk.net/resources/WP3%20Interim%20Report.pdf

El Badawy, T. A., Kamel, M. H., and Azmy, M. W., (2015) The practice of knowledge management processes: a study of private higher education institutions in Egypt, *Middle East J. of Management*, Vol.2, No.2, pp.157 – 177.

Elnaga, A. and Imran, A. (2013). The effect of training on employee performance. *European Journal of Business and Management*, 5(4), 137-147.

Emmerik, H. V. (2004). For better and for worse: adverse working conditions and the beneficial effects of mentoring. *Career Development International*, 9(4), 358-373.

Eppler, M. (2003). Making Knowledge Visible through Knowledge Maps: Concepts, Elements, Cases. In Holsapple, C. W. (Ed.) *Handbook on Knowledge Management*, Vol.1, (pp. 189 – 205), Berlin, Germany: Springer-Verla publishing.

Ernst and Young (2014), "The knowledge advantage", available at: http://www.ey.com/Publication/vwLUAssets/EY-The-knowledge-advantage-digital-edition/$FILE/EY-The-knowledge-advantage-digital-edition.pdf

Evans, C. (2003), *Managing for Knowledge: HR's Strategic Role*, Butterworth-Heinemann, Amsterdam.

Evans, M. and Ali, N. Grant, R.M. (1996b), “Toward a knowledge-based theory of the firm”, Strategic Management Journal, Vol. 17, pp. 109-122.

Evans, M., Dalkir, K. and Bidian, C., (2015). A holistic view of the knowledge life cycle: the knowledge management cycle (KMC) model. *The Electronic Journal of Knowledge Management*, *12*(1), p.47.

Facteau, J. D., Dobbins, G. H., Russell, J. E., Ladd, R. T. and Kudish, J. D. (1995). The influence of general perceptions of the training environment on pretraining motivation and perceived training transfer. *Journal of Management*, 21(1), 1-25.

Fakeeh, K. A. (2016). KSA 2030 Vision (Kingdom of Saudi Arabia’s 2030 project) and its focus on families and students. *International Journal of Computer Applications*, 149, 46-48.

Faraj, S., Jarvenpaa, S.L. and Majchrzak, A. (2011), “Knowledge collaboration in online communities”, Organization Science, Vol. 22 No. 5, pp. 1224-1239.

Fernie, S., Green, S.D. and Weller, R., (2003) Knowledge sharing Context, confusion and controversy, *International Journal of Project Management*, Vol. 21, No. 3, pp. 177-187.

Firestone, J. and McElroy, M. (2004), “Organisational learning and knowledge management: the relationship”, *The Learning Organisation*, Vol. 11, No. 2.

Firestone, J. M. (2008). On doing knowledge management. *Knowledge Management Research & Practice*. 6, 13–22.

Firestone, J.M. (2001), “Key issues in knowledge management”, Knowledge and Innovation, Vol. 1 No. 3, pp. 8-38. http://dkms.com/papers/firestoneissueskIv1n3.pdf

Firestone, J.M. and McElroy, M. (2003), Key Issues in the New Knowledge Management, Butterworth Heinemann, Boston, MA.

Fombrun, C.J., Tichy, N.M. and Devanna, M.A. (2008). *Strategic Human Resource Management*. New York: Wiley.

Foss, N., Minbaeva, D., Pedersen, T., & Reinholt, M. (2009). The impact of autonomy, task identity, and feedback on employee motivation to share knowledge. *Human Resource Management*, 48, 871-893.

Foss, N.J. and Michailova, S. eds., (2009). Knowledge governance: Processes and perspectives. Oxford University Press.

Foss, N.J., (2007). The emerging knowledge governance approach: Challenges and characteristics. *Organization*, *14*(1), pp.29-52.

Fraenkel, J. R. and Wallen, N. E. (2003). *How to design and evaluate research in education*, New York: USA: McGraw-Hill Companies Inc.

Frost, A. (2010), 'Knowledge creation', [online], http://www.knowledge-management-tools.net/knowledge-creation.html.

Fryer, B. (2004). *The Practice of Construction Management*, London, U.K.: Sage publishing.

Fuller, M. A., Valacich, J. S., & George, J. F. (2008). *Information systems project management: A process and team approach* (1st ed.). Prentice Hall.

Gable, G. (1994). Integrating case study and survey research methods: an example in information systems. *European Journal of Information Systems*, 3(2), 112–126.

Gebert, H. Geib, M. Kolbe, L. and Brenner, W. (2003), "Knowledge-enabled customer relationship management: integrating customer relationship management and

knowledge management concepts*", Journal of Knowledge Management,* Vol. 7, No. 5, pp, 107-123.

Gerami, M., (2010) Knowledge Management, *International Journal of Computer Science and Information Security*, 7(2), 234-238.

Ghobadi, S., & D'Ambra, J. (2012). Knowledge sharing in cross-functional teams: A competitive model. *Journal of Knowledge Management, 16*(2), 285–301.

Gloet, M. and Berrell, M. (2003), "The dual paradigm nature of knowledge management: implications for achieving quality outcomes in human resource management", *Journal of Knowledge Management*, Vol. 7 No. 1, pp. 78-89.

Gold, A.H., Malhotra, A. and Segars, A.H., (2001). Knowledge management: An organizational capabilities perspective. Journal of management information systems, 18(1), pp.185-214.

Grant, K. (2015). Knowledge management: an enduring but confusing fashion. Leading Issues in Knowledge Management, 2, pp.1-26.

Grant, R.M. (1996b), "Toward a knowledge-based theory of the firm", Strategic Management Journal, Vol. 17, pp. 109-122.

Grant, R.M., (1996). Toward a knowledge- based theory of the firm. Strategic management journal, 17(S2), pp.109-122.

Grey, D. (1999). *Knowledge mapping: A practical overview.* Retrieved March 10, 2016, from http://www.smithweaversmith.com/knowledg2.htm

Groff, T. and Jones, T. (2003). *Introduction to Knowledge Management*. New York: USA: Routledge.

Gupta, A., & Singhal, A. (2008). Managing human resources for innovation and creativity. *Research Technology Management,* 36(3), 41-48.

Hafeez, U. and Akbar, W. (2015). *Impact of Training on Employees Performance*. Retrieved December 5, 2016, from www.macrothink.org/journal/index.php/bms/article/download/7804/6355.

Handzic, M. (2001), 'Knowledge management: a research framework', In D. Remenyi (ed.), Second European Conference on Knowledge Management (pp. 219-229), Bled, Slovenia.

Hansen, M.T., Nohria, N. and Tierney, T. 1999. What's your strategy for managing knowledge?, Harvard Business Review, March-April, 106-16.

Hargis, M. B., & Bradley III, D. B. (2011). Strategic human resource management in small and growing firms: Aligning valuable resources. *Academy of Strategic Management Journal*, *10*(2), 105–125.

Hari, S, Egbu, C and Kumar, B. (2005). A knowledge capture awareness tool: an empirical study on small and medium enterprises in the construction industry. *Engineering, Construction and Architectural Management*, 12 (6), 533-567.

Hariharan, A., (2015) Knowledge management is fun, *The Journal for Quality and Participation*, 38(2), 34-38.

Hedlund (1994). A model of knowledge management and the N-form corporation. *Strategic Management Journal*, 15(2), 73–90.

Hislop, D. (2013), *Knowledge management in organisatons: A Critical Introduction*, Oxford: Oxford University Press.

Hlupic, V., Pouloudi, A. and Rzevski, G. (2002) 'Towards an Integrated Approach to

Hofstede, G. (2001) National culture and organizational practices, In Ashkanasy, N. (Ed.), *Handbook on Organizational Culture and Climate*, (pp. 21-22), Thousand Oaks, CA: Sage Publications.

Hofstede, G. (2001). National culture and organizational practices. In Ashkanasy, N. (Ed.), *Handbook on Organizational Culture and Climate*, (pp. 21-22), Thousand Oaks, CA: Sage Publications.

Hokkanen, J. (2002), "Why Implement Knowledge Management? Justifying the Investment," *Law Practice Management,* Vol. 47 (March 2002).

Holsapple, C.W. and Joshi, K.D. (2002), "Knowledge management: a threefold framework", The Information Society, Vol.18, pp. 47-64.

Holzmann, V. (2013). A meta-analysis of brokering knowledge in project management. *International Journal of Project Management*, *31(1)*, 2-13.

Horwitz, F. Heng, C. and Quazi, H. (2003), "Finders, Keepers? Attracting, motivating and retaining knowledge workers", *Human Resource Management Journal*, Vol. 13, No. 4.

Huber, G.P. (1991), "Organisational learning: the contributing processes and the literatures", Organisation Science, Vol. 12 No.1, pp. 88-115.

Hughey, M. and Mussnug, N. (1997). Designing effective employee training programmes. *Training for Quality*, 5(2), 52–57.

Hunter, L., Beaumont, P. and Lee, M. (2002) 'Knowledge management practice in

Huseman, C. R. and Goodman, P. J. (1999) Leading with knowledge: The nature of competition in the 21st century, Sage publications, London.

Hussain, F. Lucas, C. Ali, M. (2004). "Managing Knowledge Effectively", *Journal of Knowledge Management Practice*, May 2004.

Hustad, E. (2004), "Knowledge Networking in Global Organisations: The Transfer of Knowledge", *Proceedings of the 2004 ACM SIGMIS CPR Conference*, (SIGMIS 2004), The University of Tucson, Arizona, USA, 22-24 April, pp. 55-64.

Hyde, K.F. (2000). Recognising deductive processes in qualitative research. *Qualitative Market Research: An International Journal*, 3(2), 82-90.

Ipe, M. (2003). Knowledge sharing in organizations: A conceptual framework. *Human Resource Development Review*, 2(4), 337-359.

Jahenzeb, K. and Bashir, N. A. (2013). Training and development program and its benefits to employees and organisation: A conceptual study. *European Journal of Business and Management*, 5(2), 243-252.

Jain, A.K. and Moreno, A., (2015). Organizational learning, knowledge management practices and firm's performance: an empirical study of a heavy engineering firm in India. *The Learning Organization*, 22(1), pp.14-39.

Jankowicz, A.D. (2005). *Business Research Projects*. London: International Thomson Business Press 4th edition.

Jennex M. E. (2007). Knowledge Management in Modern Organizations. London, UK: IGI Global.

Jiang, J. Wang. S. and Zhao, S. (2012), "Does HRM facilitate employee creativity and organisational innovation? A Study of Chinese Firms", *The International Journal of Human Resource Management*, Vol. 23, No. 19, pp. 4025-4047.

Jiang, J. Wang. S. and Zhao, S. (2012), "Does HRM facilitate employee creativity and organisational innovation? A Study of Chinese Firms", *The International Journal of Human Resource Management*, Vol. 23, No. 19, pp. 4025-4047.

Jimenez-Jimenez, D., & Sanz-Valle, R. (2013). Studying the effect of HR practices on the knowledge management process. *Personnel Review,* 42(1), 28–49.

Joffe, H. (2011). *Thematic analysis*. Chichester: John Wiley & Sons.

Jonsson, A., & Tell, F. (2013). Knowledge management, in Strannegard, L., & Styhre, A. (Eds.): *Management: An advanced introduction.* Lund: Studentlitteratur.

Kalling, T., & Styhre, A. (2006). *Knowledge sharing in organisations.* Malmo: Liber.

Kamara J., Anumba C. and Carrillo P.M. (2002) A CLEVER approach to selecting a knowledge management strategy, *International journal of project management*, Vol. 20, No. 3, pp. 205-211.

Kasimu MA, Roslan BA and Fadhlin A (2013) Knowledge sharing practices in construction organisation in Nigeria, International Journal of Engineering Research and Technology, 2(1), 1–10.

Kerr, M. (2003), "Knowledge Management", *The Occupational Psychologist*, No. 48, May 2003, pp. 24-6.

Kerrin, M. and Currie, G. (2003), "Human resource management and knowledge management: enhancing knowledge sharing in a pharmaceutical company", *International Journal of Human Resource Management*, Vol. 14 No. 6, pp. 1027-45.

Kerzner, H. (2006), Project Management: A Systems Approach to Planning, Scheduling, and Controlling, 9th ed., Wiley, Hoboken, NJ.

Keyes, J. (2006), *Knowledge Management, Business Intelligence, and Content Management: The IT Practitioner's Guide,* NW: Taylor and Francis Group.

Khuzaimah, K. H., and Hassan, F. (2012) Uncovering tacit knowledge in construction industry: communities of practice approach, *Procedia - Social and Behavioral Sciences*, 50(1), 343 – 349.

Kim, S., Suh, E. and Hwang, H. 2003. Building the knowledge map: an industrial case study, Journal of Knowledge Management, 7, 2, 34-45.

Kluge, J., Wolfram, S. and Licht, T. (2001) *Knowledge Uplugged. The McKinsey &*

Knowledge Management: "Hard", "Soft" and "Abstract" Issues', *Knowledge and Process Management,* 9:2, 90-102.

Koenig, M.E.D. (2002), "The third stage of KM emerges", KM World, Vol. 11 No. 3, available at: www.kmworld.com/Articles/Editorial/Features/The-third-stage-of-KM-emerges-9327.aspx (accessed 20 May 2015).

Koening, M. (2012), "What is KM? Knowledge Management Explained", *KMWorld*, Northwestern University. [Online] [Retrieved on 3rd February 2015 at www.kmworld.com/articles/editorial/what-is-KM-Knowledge-Management-Explained-82405.aspx]

Kogut, B., & Zander, U. (2008). Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies,* 24(4), 625-646.

Kraus, A. J. and Wilson, C. N. (2012). *Leadership development for organizational success*. Retrieved January 5, 2017, from http://www.siop.org/WhitePapers/Visibility/LeadershipDevelopment.pdf

Krogh, G., Ichijo, K., & Nonaka, I. (2010). *Enabling knowledge creation: How to unlock the mystery of tacit knowledge and release the power of innovation*. Oxford university press.

Kupers, W. (2005), "Phenomenology of implicit and narrative knowing", Journal of Knowledge Management, Vol. 9 No. 6, pp. 114-133.

Ladika, S. (2008), "Break the cycle", PM Network, Vol. 22 No. 2, pp. 74-77.

Land, L.P.W., Land M. and Handzic, M. 2002. Retaining Organisational Knowledge: A Case Study of an Australian Construction Company, Journal of Information and Knowledge Management, 1, 2, 119-129.

Laudon, K. C. and Laudon, J. P. (1998). *Management Information Systems: New Approaches to Organization and Technology*. Upper Saddle River, NJ: Prentice Hall.

Lave, J. and Wenger, E. (1991), Situated learning: legitimate peripheral participation, Cambridge University Press, Cambridge.

Lee, D. and Ahn, J. (2007), "Reward systems for intra-organisational knowledge sharing", European Journal of Operational Research, Vol. 180, pp. 938-956.

Lengnick-hall, L. and Lengnick-Hall, A. (2003), *Human resource management in the knowledge economy: New challenges, new roles, new capabilities*, San Francisco, CA: Berrett-Koehler.

Lengnick-Hall, M.L., & Lengnickel-Hall, C.A. (2006). International human resource management and social network/social capital theory. *Handbook of research in international human resource management*, 475-487.

Leonard-Barton, D. 1992. The factory as a learning laboratory, Sloan Management Review, Fall, 23-38.

Lepack, D.P., & Snell, S.A. (2009). The human resource architecture: toward a theory of human capital allocation and development. *Academy of Management Review*, 24, 31-48.

Lev, B. (2001), Intangibles: Management, Measurement and Reporting, Brookings Institute, Washington, DC.

Lewin, A.Y., Massini, S. and Peeters, C., 2011. Microfoundations of internal and external absorptive capacity routines. Organization Science, 22(1), pp.81-98.

Liamputtong, P., and Ezzy, D., (2005) *Qualitative research methods*, Oxford University Press, South Melbourne.

Liao, Y.-S. (2011). "The effect of human resource management control systems on the relationship between knowledge management strategy and firm performance." *International Journal of Manpower*, Vol. 32, No. 5/6, 494-511.

Liebowitz, J. (2012), *Knowledge Management Handbook: Collaboration and Social Networking* (2nd Edition), FL: CRC Press.

Liebowitz, J. 2005. Linking social network analysis with the analytic hierarchy process for knowledge mapping in organisations, Journal of Knowledge Management, 9, 1, 76-86.

Lin, Y.C. and Lin, L.K. (2006). Critical Success Factors for Knowledge Management Studies in Construction. ISARC Proceedings.

Lindner, F. and Wald, A. (2010, "Success factors of knowledge management in temporary organisations", *International Journal of Project Management*, September 2010.

Lindstaedt, S. and Zimmermann, V. (2006), Managing knowledge for the new economy, IST Results, available at: www.istresults.cordis.lu

Little, S., Quintas, P. and Ray, T. (2002), "Part III knowledge, innovation and human resources", in Little, S., Quintas, P. and Ray, T. (Eds), *Managing Knowledge: An Essential Reader*, London: The Open University in association with Sage Publications.

Lopez-Nicolas, C. and Merono-Cerdan, A. (2011), "Strategic Knowledge Management, Innovation and Performance", *International Journal of Information Management*, February 2011.

Lynne Markus, M. (2001) 'Toward a Theory of Knowledge Reuse: Types of

Magd, H. and Hamza, S. (2012), "A Proposed Knowledge Management System in SOFCON: Saudi Arabia Perspectives", *Nang Yan Business Journal*, Vol. 1, No. 1.

Magnier-Watanabe, R. and Senoo, D. (2008). Organizational characteristics as prescriptive factors of knowledge management initiatives. *Journal of Knowledge Management*, 12(1), 21-36.

Malhotra, Y. (2000), "Knowledge Management fro E-Business Performance: Advancing Information Strategy to "Internet Time"", *Information Strategy: The Executive's Journal*, Vol. 16, Issue 4, 2

Markus, M.L. (2001) Toward a theory of knowledge re-use: Types of knowledge re-use Situations and factors in re-use success, *Journal of Management Information Systems*, Vol. 18, No. 1, pp. 57-93.

Martin, R. (2009). The design of business: Why design thinking is the next competitive advantage. USA: Harvard Business Review Press.

Massingham, P. (2014) An evaluation of knowledge management tools: Part 1 Managing knowledge resources, Journal of Knowledge Management, 18(6), 1075-1100.

Matheson, D & Matheson, J. (1998*)* "The Smart Organization". *Boston: Hravard Business School Press*, 1998.

Mathieu, J. E., Tannenbaum, S. I. and Salas, E. (1992). Influences of individual and situational characteristics on measures of training effectiveness. *Academy of Management Journal*, 35(4), 828-47.

Matsumoto, I. T., Stapleton, J., Glass, J., Thorpe, T. 2005. A knowledge-capture report for multidisciplinary design environments, Journal of Knowledge Management, 9, 3, 83-92.

Mayo, A., (1998) Memory bankers, *People Management*, Vol. 4, No. 2, pp. 34-38.

McAdam, R. and Reid, R. (2001) 'SME and large organisation perception of

McElroy, M. (1999). "The Second Generation of Knowledge Management", *Knowledge Management*, pp. 86-88.

McEvily, S. and Chakravarthy, B. (2002), The persistence of knowledge-based advantage: an empirical test for product performance and technological knowledge, *Strategic Management Journal*, Vol. 23, No. 4, pp. 285-305.

McGraw, K., and Harrison-Briggs, K. (1989), *Knowledge acquisition: Principles and guidelines*. Eaglewood Cliffs, NJ: Prentice Hall.

Meijerink, J., Bondarouk, T., & Looise, J. K. (2013). Value creation through HR shared services: Towards a conceptual framework. *Personnel Review, 42*(1), 83–104. doi: 10.1108/00483481311285246

Minbaeva, D. (2005). HR practices and MNC knowledge transfer. *Personnel Review*, 34(1), 125-144.

Minbaeva, D. (2013). Strategic HRM in building micro-foundations of organisational knowledge-based performance. *Human Resource Management Review*, 23(4), 378-390.

Mohamed, M., Stankowsky, M. and Murray, A. (2006), "Knowledge management and information technology: can they work in perfect harmony?", Journal of Knowledge Management, Vol. 10 No. 3, pp. 103-116.

Mondy, R., Noe, R. and Gowan, M. (2007). *Human resource management*. Upper Saddle River, N.J.: Pearson Prentice Hall.

Morris, J. (1971). Management development and development management. *Personnel Review*, 1(1), 30-43.

Muscatello, R. and Joseph, A. (2003). The potential use of knowledge management for training: A review and directions for future research. *Business Process Management Journal*, 9(3), 382-394.

Nassazi, A. (2013). *Effects of training on employee performance*. Retrieved January 5, 2017, from http://theseus32-kk.lib.helsinki.fi/bitstream/handle/10024/67401/THESIS.pdf?sequence=1

Ng, P., Goh, G. and Eze, U. (2011), "The Role Of Knowledge Management In Product Development Performance: A Review", *Journal of Knowledge Management Practice*, Vol. 12, No. 1, March 2011.

Nicolas, R. (2004), "Knowledge Management impacts on decision making process", *Journal of Knowledge Management*, Vol. 8, Iss. 1, pp. 20-31.

Nonaka, I. (1991), “The knowledge creating company”, Harvard Business Review, November-December, pp. 432-436.

Nonaka, I. and Toyama, R. (2003). The knowledge-creating theory revisited: knowledge creation as synthesizing process. *Knowledge management research and practice*, 1(1), 2-10.

Nonaka, I. and Takeuchi, H. (1995), *The knowledge creating company: How Japanese Companies Create the Dynamics of Innovation*, New York: Oxford University Press.

Nonaka, I. and Takeuchi, H. (1995), The knowledge-creating company, Oxford University Press, New York.

Nonaka, I., & Krogh, G. (2009). Perspective - tacit knowledge and knowledge conversion: Controversy and advancement in organizational knowledge creation theory. *Organization Science*, 20(3), 635-652.

Nonaka, I., (1994) A dynamic theory of organisational knowledge creation, *Organisational Science*, 5(1), 14-37.

Nonaka, I., and Takeuchi, H., (1995) *The knowledge-creating company - How Japanese companies create the dynamics of innovation*, Oxford University Press, London.

Nonaka, I.(1994). A dynamic theory of organisational knowledge creation, Organisational Science, 5, 1, 14-37.

Nonaka, I; and Takeuchi, H. (2011). The Wise Leader. *Harvard Business Review*, May;

Noorderhaven, N., & Harzing, A.W. (2009). Knowledge-sharing and social interaction within MNEs. *Journal of International Business Studies*, 40(5), 719 – 741.

Noordin, M.F., Burhanuddin, L.A. and Kanaa, A., (2012) The current state of information management in the Malaysia Construction Industry, *Australian Journal of Basic and Applied Sciences*, Vol. 6, No. 6, pp. 138-145.

Nowacki, R. and Bachnik, K., (2016). Innovations within knowledge management. Journal of Business Research, 69(5), pp.1577-1581. [Online]. [Accessed 2 February 2018]. Available at:< https://www.sciencedirect.com/science/article/pii/S0148296315004439>.

O'dell, C. and Grayson, J. (1998). *If Only We Knew What We Know: The Transfer of Internal Knowledge and Best Practice*. New York, USA: Free Press.

Olatokun, W., and Nwafor, C. I., (2012) The effect of extrinsic and intrinsic motivation on knowledge sharing intentions of civil servants in Ebonyi state, Nigeria, *Information Development*, Vol. 28, No. 3, pp. 216-234.

Olayinka, R.A., (2015). A Knowledge Management Framework for Reducing the Cost of Poor Quality on Construction Projects (Doctoral dissertation). http://wlv.openrepository.com/wlv/handle/2436/619040

Oltra, V. (2005). Knowledge management effectiveness factors: the role of HRM. *Journal of Knowledge Management*, 9(4), 70-86.

Oncioiu, I. (2013), *Business Innovation, Development, and Advancement in the Digital Economy*, PA: IGI Global.

OPM. (2008). *Best practices: Mentoring*. Retrieved January 15, 2016, from https://www.opm.gov/policy-data-oversight/training-and-development/career-development/bestpractices-mentoring.pdf

Orlikowski, W. (2002), “Knowing in Practice: Enacting a Collective Capability in Distributed Organizing”, *Organization Science, Informs*, Vol. 13, No.3, May-June 2002, pp. 249-273.

Paauwe, J. (2009). HRM and Performance: Achieving Long-term Viability , Oxford University Press, Oxford.

Pacharapha, T. and Ractham, V.V. (2012), “Knowledge acquisition: the roles of perceived value of knowledge content and source”, Journal of Knowledge Management, Vol.16 No.5, pp. 724-739.

Pan, L., Newell, S. haung, C. and Cheung, K. (2001), “Knowledge Integration as a key Problem in an ERP Implementation”, *Twenty-Second International Conference on Information Systems*, New Orleans: USA, pp. 321-328.

Patrick, M. W. (2006). Theoretical perspectives for strategic human resource management. *Journal of Management*.

Patton, M. Q. (2014) *Qualitative evaluation and research methods,* Sage publications, Newbury Park, CA.

Pauleen, D.J., Murphy, P. (2005), “In praise of cultural bias”, *MIT Sloan Management Review*, Vol. 46, No. 2, pp. 21-22.

Paulin, D., & Suneson, K. (2012). Knowledge transfer, knowledge sharing and knowledge barriers – three blurry terms in KM. *The Electronic Journal of Knowledge Management*, 10(1), 81-91.

Pentland, B.T. (1995), “Information systems and organizational learning: the social epistemology of organizational knowledge systems”, Accounting, Management and Information Technologies, Vol. 5 No.1, pp. 1-21.

Perumal, P. (2006), *Quest for Excellence Through Globalisation*, Elgin: New Dawn Press Group.

Pettrash, G. (1996). *Managing knowledge assets for value*. Proceedings of the Knowledge-Based Leadership Conference. Boston, MA.

Pfeffer, K., Baud, I., Denis, E., Scott, D., and Sydenstricker-Neto, J. (2013) Participatory spatial knowledge management tools: empowerment and upscaling or exclusion? Information, Communication & Society, 16(2), 258-285.

Pivert, O. and Zadrozny, S. (2014), *Flexible Approaches in Data, Information and Knowledge Management*, London: Springer International Publishing.

Polanyi, M. (1962), The Tacit Dimension, Doubleday, New York, NY.

Probst, G., Raub, S., & Romhardt, K. (2002). Knowledge management in organization. Kraków: Publishing Office.

Prusak, L. (1999), "Where did Knowledge Management Come From?", Knowledge Directions, Vol. 1, No.1, pp.90-96.

Reinhardt, R. (2004): Improving organizational performance by a knowledge related measurement and monitoring system. *OKLC 2004*, Innsbruck.

Remus, U. (2012), "Exploring the Dynamics behind Knowledge Mangagement Challenges – An Enterprise Resource Planning Case Study*", Information System Management*, Vol. 29, No. 188, pp. 200-212.

Rezgui, Y., Hopfe, C.J. and Vorakulpipat, C. (2010) Generation of knowledge management in the architecture, engineering and construction industry: an evolutionary perspective, Advanced Engineering Informatics, Vol. 24, No. 2, pp.219–228.

RnR Market Research (2014), *Saudi Arabia Construction Industry: 10.98% CAGR Forecast to 2018,* PR Newswire. Retrieved on 5th May 2015 from www.prnewswire.com/news-releases/saudi-arabia-construction-industry-1098-cagr-forecast-to-2018-285917141.html.

Robbins, S. (2006), *Organizational Behavior (4th Edition),* Toronto, Ontario: Pearson Prentice Hall.

Roberts, I. (2001), "Reward and performance management", in Beardwell, I. and Holden, L. (Eds), *Human Resource Management: A Contemporary Approach*, Prentice-Hall, Harlow, pp. 506-58.

Robertson, M. and O'Malley Hammersley, G. (2000), "Knowledge management practices within a knowledge-intensive firm: the significance of the people management dimension", *Journal of European Industrial Training*, Vol. 24 Nos 2/3/4, pp. 241-53.

Rollett, H. (2003), Knowledge management processes and technologies, Kluwer, Norwell.

Russ, M. Fernando, J. and Naveda, F. (2010), *Knowledge Management Strategies for Business Development,* Hershey: Business Science Reference.

Santosus, M. and Sumacz, J. (2001), "The ABCs of Knowledge Management", Retrieved from http://www.cio.com/research/knowledge/edit/kmabcs.html.

Saunders, M., Lewis, P. & Thornhill, A. (2009) *Research methods for business students*, 5th ed., Harlow, Pearson Education.

Saunders, R. 2000. Managing Knowledge. Harvard Management Communication Letter, June, 3-5.

Scarbrough, H. (2003), "Knowledge management, HRM and the innovation process", *International Journal of Manpower,* Vol. 24 No. 5, pp. 501-16.

Scarbrough, H. (2007). Knowledge management, HRM and the innovation process. *International Journal of Manpower*, 24(5), 501-516.

Schiuma, G. (2012), "Managing Knowledge for business performance improvement", *Journal of Knowledge Management*, Vol. 16, Issue 4, pp. 515-522.

Schuler, R. S., & Jackson, S. E. (2007). *Strategic human resource management* (2nd ed.). Malden, MA: Blackwell Publishing.

Senge, P. M., Lichtenstein, B. B., Kaeufer, K., Bradbury, H. and Carroll, J., S., (2007) Collaborating for systemic change, *MIT Sloan Management Review*, Vol. 48, No. 2, pp. 44-53.

Senge, P.M. (1990), The Fifth discipline: the art and practice of the learning organization Doubleday Inc. Publishers, New York.

Serna, E. (2015). Maturity model of transdisciplinary knowledge management. *International Journal of Information Management*, 35(6), 647-654.

Shah, M. H., Rahneva, N., and Ahmed, R., (2014) Knowledge Management Practice at a Bulgarian Bank: A Case Study, *International Journal of Knowledge Management* (IJKM), Vol. 10, No. 3, pp. 54-69.

Shahin, A., Pool, J K., and Amani, M., (2014) The effect of organisational factors of knowledge management on corporate entrepreneurship: an empirical investigation on Iranian sport organisations, *Middle East J. of Management*, Vol.1, No.4, pp.330 – 341.

Sher, P. J., and Lee, V. C. (2004). Information technology as a facilitator for enhancing dynamic capabilities through knowledge management. *Information & Management*, 41(8), 933-945.

Shokri-Ghasabeh, M. and Chileshe, N., (2014). Knowledge management: Barriers to capturing lessons learned from Australian construction contractors perspective. Construction Innovation, 14(1), pp.108-134. http://www.emeraldinsight.com/doi/pdfplus/10.1108/CI-06-2013-0026

Shongwe, M.M. (2015), "Knowledge creation in students' software development teams", South African Journal of Information Management 17(1), [online] http://dx.doi.org/10.4102/ sajim.v17i1.613. http://journals.co.za/docserver/fulltext/info/17/1/info_v17_n1_a1.pdf?expires=1517843005&id=id&accname=guest&checksum=BB7312C0A74A6ECD8A7B8819C7F83616

Shongwe, M.M., (2016). An analysis of knowledge management lifecycle frameworks: Towards a unified framework. The Electronic Journal of Knowledge Management, 14(3), pp.140-153.

Shultze, U., & Stabell, C. (2004). Knowing what you don't know? Discourses and contradictions in knowledge management research. *Journal of Management Studies*, 41(4), 549-573.

Siakas, K.V., Georgiadou, E. & Balstrup, B. (2010). Cultural impacts on knowledge sharing: empirical data from EU project collaboration. *Vine*, 40(3-4), 376-389.

Simon, H.A. (1991), "Bounded rationality and organisational learning", Organisation Science, Vol. 2, pp. 125-134.

Simonin, B., & Ozsomer, A. (2009). Knowledge processes and learning outcomes in MNCs: an empirical investigation of the role of human recourse practices in foreign subsidiaries. *Human Resource Management*, 48(4), 505–530.

Singleton, R. and Straits, B. (2005) Approaches to Social Research, Oxford University Press, London.

Skapinker, M. (1999). "Knowledge Management", *The Change Agenda*, Chartered Institute of Personnel and Development.

Skrzypek, E. (2004). Valuation of knowledge and intellectual capital, and their impact on the efficiency in the organization. In Szyjewski, Z., Nowak, J. S., and Grabara, J. K. (Ed.), Strategies of informatization and knowledge management. Warsaw: WNT 11–26.

Skyrme, D. J. and Amidon, D. M. (1997). The knowledge agenda. *Journal of Knowledge Management*, 1(1), 27-37.

Skyrme, D., (2001) *Customers – A New Twist on Knowledge Management,* Available from: http://www.skyrme.com/updates/u5.htm [Downloaded: 2016-02-18].

Smart, D.W., Stojanovic, T.A. and Warren, C.R. (2014). Is EIA part of the wind power planning problem?. *Environmental Impact Assessment Review*, 49, 3-23.

Snowden, D.J. (2000), "The social ecology of knowledge management", in Despres, C. and Chauvel, D. (Eds), Knowledge Horizons: The Present and Promise of Knowledge Management, Butterworth Heinemann, Boston, MA, pp. 237-265.

Spender, J.C., 1998. Pluralist epistemology and the knowledge-based theory of the firm. Organization, 5(2), pp.233-256.

Staats, B. Valentine, M. and Ednondson, A. (2010), "Using What We Know: Turning Organisational Knowledge into Team Performance", HBS Working Paper Text, No. 11-031, Published on 6th October, 2010.

Stacey, R. (2001), Complex Responsive Processes in Organizations: Learning and Knowledge Creation, Routledge, London.

Stankosky, M. (2011). *Creating the Discipline of Knowledge Management*. London, UK: Taylor & Francis.

Stevens, R.H., Millage, J., and Clark, S., (2010) Waves of Knowledge Management: The Flow between Explicit and Tacit Knowledge, *American Journal of Economics and Business Administration*, Vol. 2, No. 1, pp. 129-135.

Stewart, T.A. (1997), Intellectual Capital: The New Wealth of Nations, Doubleday, New York, NY.

Strauss, A. and Corbin, J. (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Thousand Oaks, California: Sage publishing.

Sukumar, S.R. and Ferrell, R.K. (2013), "Big Data' collaboration: exploring, recording and sharing enterprise knowledge", Information Services & Use, Vol. 33, pp. 257-270.

Suresh, S., and Egbu, C., (2012) *Knowledge capture in small and medium enterprises: Construction Industry Perspective*, LAP Lambert Academic Publishing, Germany.

Suresh, S., Oayinka, R., Chinyio, E. and Renukappa, S. (2017) Impact of knowledge management practices on construction projects, Proceedings of the Institution of Civil Engineers - Management, Procurement and Law, Vol. 170, No. 1, pp.27–43.

Suresh, S., Olayinka, R., Chinyio, E., and Renukappa, S. (2016). Impact of knowledge management practices on construction projects. *Proceedings of the Institution of Civil Engineers - Management, Procurement and Law.* 169(6), 1-17.

Suresh, S., Olayinka, R., Chinyio, E., and Renukappa, S., (2017) Impact of knowledge management practices on construction projects, *Proceedings of the Institution of Civil Engineers - Management, Procurement and Law*, 170(1), 27-43.

Suresh, S., Olayinka, R., Chinyio, E., and Renukappa, S., (2017) Impact of knowledge management practices on construction projects, *Proceedings of the Institution of Civil Engineers - Management, Procurement and Law*, Vol. 170, No. 1, pp. 27-43.

Sveiby, K.E. (1997), The New Organizational Wealth: Managing and Measuring Knowledge-based Assets, Berrett-Koehler, San Francisco, CA.

Swart, J. and Kinnie, N. (2006), "Sharing knowledge in knowledge-intensive firms", *Human Resource Management Journal*, Vol. 13, Issue 2, pp. 60-75.

Swartz, J. and Kinnie, N. (2003), "Sharing knowledge in knowledge-intensive firms", *Human Resource Management Journal*, Vol. 13 No. 2, pp. 60-75.

Swieringa, J. and Wierdsma, A. (1992). *Becoming a Learning Organization: Beyond the Learning Curve.* Workingham, U.K: Addison-Wesley.

Switzer, C. (2008), "Time for change: empowering organizations to succeed in the knowledge economy", Journal of Knowledge Management, Vol. 12 No. 2, pp. 18-28.

Szulanski, G. (2003), *Sticky Knowledge – Barriers to Knowing in the Firm*, Sage Publications Ltd, London.

Tajeddini, K. and Mueller. S.L. (2012) 'Corporate entrepreneurship in Switzerland: evidence from a case study of Swiss watch manufacturers', International Entrepreneurship and Management Journal, Vol. 8, No. 3, pp.355–372.

Tajeddini, K., Ratten, V., and Denisa, M., (2017) Female Entrepreneurs in Bali, Indonesia, *Journal of Hospitality and Tourism Management*, Vol. 31, No. 1, pp. 52-58.

Talet, A. and Mansour, E. (2011), "knowledge-based Risk Management Framework for Information Technology Project", *International Journal of Information Management*, February 2012.

Tan, H.C., Anumba, C.J., Carrillo, P.M., Bouchlaghem, D., Kamara, J., and Udeaja, C., (2010) *Capture and Reuse of Project Knowledge in Construction*, John Wiley and Sons, London.

Tashakkori, A. and Teddlie, C. (Eds.) (2010). *Handbook of mixed methods in social and behavioral research*, Thousand Oaks, CA: Sage publishing.

Taskin, N., Verville, J., and Al-Omari, A. (2011), "A comprehensive framework for knowledge management system lifecycle ", African Journal of Business Management, Vol.7 No15, pp. 1285-1295.

Tatnall, A. (2013), *Social and Professional Applications of Actor-Network Theory for Technology Development*, PA: IGI Global.

Teerajetgul, W., Chareonngam, C., and Wethyavivorn, P., (2009) Key knowledge factors in Thai construction practice, *International Journal of project management*, 27(8), 833-839.

The European Committee for Standardization (CEN) (2003). 'European guide to good practice in knowledge management– chapter 1 – Terminology', [online],

http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/bf_bancos/e0002341.pdf

Thiry, M. (2004). How can the benefits of PM training programs be improved. *International Journal of Project Management*. 22, 13-18.

Tian, X., (2017). Big data and knowledge management: a case of déjà vu or back to the future?. Journal of Knowledge Management, 21(1), pp.113-131. [Online]. [Accessed 1 Feb 2018]. Available at:< https://search.proquest.com/docview/1874671903?pq-origsite=summon>.

Timetric (2014), Construction in Saudi Arabia – Key Trends and Opportunities to 2018, marketresearch.com. Retrieved on 5th May 2015 from www.marketresearch .com.

Tiwana, A. (2000). *The Knowledge Management Toolkit*, New Jersey, USA: Prentice Hall.

Tutt, D, Pink, S, and Dainty, A., (2012) *Ethnographic Research in the Construction Industry*, Routledge, UK.

Uden, L. Oshee, D. Ting, I-Hsien, and Liberona, D. (2014), "Knowledge Management in Organisations", *9th International Conference, Santiago*, Chile, September 2-5, 2014 Proceedings.

Ulrick, D. (1997) Organising around capabilities, In Hesselbein, F., Goldsmith, M., and Beckhard, R., (Eds), *The organization of the future*, Jossey-Bass publishing, San Francisco, USA.

Van der Spek, R. and Spijkervet, A. (1997), "knowledge management: dealing intelligently with knowledge", in Liebowitz, J. and Wilcox, L. (Eds), Knowledge Management and its Integrative Elements, CRC Press, New York, NY, pp. 93-102.

Ventures (2015) *KSA construction industry-capable of sustaining strong currents*, Ventures Middle East LLC, Abu Dhabi, UAE.

Virtanen, I., (2015). In search for a theoretically firmer epistemological foundation for the relationship between tacit and explicit knowledge. Leading Issues in Knowledge Management, Volume Two, 2, p.95. http://www.ejkm.com/volume11/issue2/p118

von Hippel, E. (1994) Sticky information and the locus of problem solving: Implications for innovation, Management science, 40, 429-439.

Von Krogh, G., Ichijo, K. and Nonaka, I. (2000) Enabling Knowledge creation. Oxford University Press, New York.

Wan, J., Zhang, H., Wan, D., and Huang, D. (2010), "Research on knowledge creation in software requirement development", Journal of Software Engineering & Applications, Vol.3 No.5, pp. 487-494.

Weber, F. Wunram, M., Kemp, J., Pudlatz, M., and Bredehorst, B. (2002), 'Standardisation in knowledge management– towards a common knowledge management framework in Europe. In: Proceedings of UNICOM Seminar „Towards Common Approaches & Standards in KM", 27 February, 2002, London.

Whelan, E. and Carcary, M. (2011), Integrating talent and knowledge management; where are the benefits?, Journal of *Knowledge Management*, Vol. 15, No. 4, pp, 675-687.

Whittington, R., Pettigrew, A., Peck, S., Fenton, E., and Conyon, M., (1999) Change and complementarities in the new competitive landscape: A European panel study, *Organization Science,* Vol. 10, No. 5, pp. 583–600.

Whittom, A. and Roy, M.C. (2009). Considering participant motivation in knowledge management projects. *Journal of Knowledge Management Practice*. 10(1), 20-35.

Wiig, K. M. (2013) *Knowledge management. Foundations: thinking about thinking: how people and organizations create, represent, and use knowledge*. Arlington: Schema Press.

Wiig, K.M. (1993), Knowledge management foundations: thinking about thinking, how people and organisations create, represent, and use knowledge, Schema Press, Arlington.

Wiig, K.M. (2004), People-focused Knowledge Management, Butterworth Heinemann, Boston, MA.

Wijk, R.V., Jansen, J.J.P., & Lyles, M.A. (2008). Inter- and intra-organizational knowledge transfer: A meta-analytic review and assessment of its antecedents and consequences. *Journal of Management Studies,* 45(4), 830–853.

Wilson, P. (2014), "International Human Resource Development: Learning, Education and Training for Individual and Organisations", *Development and Learning in Organisations*, Vol. 28, Issues:2.

World Bank (1998) *What is knowledge management? A background to the World*

www.kmworld.com/Articles/Editorial/Features/The-third-stage-of-KM-emerges-9327.aspx (accessed

Wylie, N., Sturdy, A., & Wright, C. (2014). Change agency in occupational context: lessons for HRM. *Human Resource Management Journal, 24(1),* 95-110.

Yin, R. K. (2011). *Applications of case study research*. London: Sage, pp.92-140.

Yu, Y., Hao, J., Dong. X. and Khalifa, M. (2013). A multilevel model for effects of social capital and knowledge sharing in knowledge-intensive work teams. *International Journal of Information Management*, 33 (5), 780–790.

Yu, Y., Hao, J., Dong. X. and Khalifa, M. (2013) A multilevel model for effects of social capital and knowledge sharing in knowledge-intensive work teams, *International Journal of Information Management*, 33(5), 780–790.

Zack, M. H., (2002) Developing a knowledge strategy: Epiogue, in the *strategic management of intellectual capital and organisational knowledge - A collection of readings*, Bontis, N., and Choo, C. W., (eds.), Oxford University Press, London.

Zanini, M. T., & Musante, M. (2013). Trust in the knowledge economy. *Journal of Business & Industrial Marketing*, *28*(6), 487-493.

Zhang, D. (2013), "Granularities and inconsistencies in Big Data analysis", International Journal of Software Engineering and Knowledge Engineering, Vol. 23 No. 6, pp. 887-893.

Zhou, K. and Li, C. (2012), "How knowledge affects radical innovation: knowledge base, market knowledge acquisition, and internal knowledge sharing", *Strategic Management Journal*, Vol. 33, pp. 1090-1102.

Zou, P.X.W. and Lim, C.H. (2002), "The implementation of knowledge management and organisational learning in construction company", Advances in Building Technology, Vol. 2, pp. 1745-1753.

APPENDIX A: PROTOCOL FOR SEMI-STRUCTURED INTERVIEWS

Embedding knowledge management strategies in the Kingdom of Saudi Arabia construction industry

Dear Potential Participant,

My name is Hanouf Mansour Alosaimi and I am a research student at the University of Wolverhampton. As a part of my programme I am carrying out a study into how Kingdom of Saudi Arabia construction organisations are embedding knowledge management strategies for competitiveness. I would like to invite you to participate in the above research project, as you are possibly influential for the implementation of knowledge management strategies in your organisation.

If you agree to participate you will be asked to:

- Participate in an interview (of maximum 30 minute's duration) with me to answer questions regarding how your organisation embeds KM strategies for improved competitiveness and what influences your organisation to do so. Questions will be topic specific and not of a personal nature, and you will not be asked to reveal any information which your organisation would regard as sensitive and not for public disclosure. You can choose not to answer questions.
- Complete the attached consent form and return it to me.

With your agreement, interviews will be tape recorded then transcribed onto a computer system. You may review, edit or erase the transcripts and tape recordings of your interview if you wish to do so. Recordings will then be destroyed. Your responses will be treated as confidential and computer transcripts will not contain references to any persons (including yourself) or organisations. Such references will be replaced by codes known only to me, and all data will be stored securely.

Once completed a summary of results will be available at the conclusion of this research study. If you wish to obtain a copy of these results, please provide your contact details. Please note that all data gathered for this research will be stored securely and destroyed after the report has been submitted. Supervision team and I will be the only people who will have access to this data.

Thank you for taking time to consider this invitation and if you choose to participate in this research. I would like to extend my personal gratitude; your contribution is greatly appreciated.

Hanouf Mansour Alosaimi
University of Wolverhampton
Wulfruna Street, City Campus
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INTERVIEW QUESTIONS

Date	
Time of interview	
Name of organisation	

	Name of Interviewee	
	Position of Interviewee	
	Organisation's total employee size	
	• Please kindly tell me a little about what your current job role is in the organisation?	
	• Can you describe the key drivers that have fuelled the need for managing knowledge in your organisation?	
	• From the job role and responsibilities that you perform in this organisation, please, describe key knowledge management strategies that are currently being implemented in your organisation?	
	• From the job role and responsibilities that you perform in this organisation, please, enlighten me on the current KM specific training strategies adopted in your organisation?	
	• From the job role and responsibilities that you perform in this organisation, please, enlighten me on the future KM specific training strategies adopted in your organisations?	
	• From the job role and responsibilities that you perform in this organisation, please, enlighten me key challenges your organisation face in implementing knowledge management initiatives?	
	• In your view, kindly explain how the initiatives related to managing knowledge have contributed to your organisation's competitiveness?	
	• In your view is there a need for developing "a framework for managing knowledge"?	

Thank you for your views on the above questions. I would also like to thank you for the time you have dedicated to this research. If you are interested to know the outcome of this research, it would be my pleasure to share it with you.

Consent form

Embedding knowledge management strategies in the Kingdom of Saudi Arabia construction industry

Consent Statement

- I agree to participate in the above research project and give my consent freely.
- I understand that the project will be conducted as described in the "Information Sheet", a copy of which I have retained.
- I understand that I can withdraw from the project at any time and do not have to give a reason for withdrawing.
- I consent to participate in an interview with the researcher.
- I understand that my personal information will remain confidential to the researcher.
- I understand that my organization will not be identified either directly or indirectly.
- I have had the opportunity to have questions answered to my satisfaction.

Print Name: _____

Signature: _____ Date: _____

Contact Address:

_____

_____

Phone Number: _____

Fax Number: _____

Email Address: _____

A framework for managing knowledge in the KSA construction organisations

Purpose of the interviews:

The interview seeks to validate the developed framework for managing knowledge in the KSA construction organisations.

Participants details:

- Name: .....……
- Position / Area of expertise: ……..……
- Organisation: ……..……
- Date: …….…….

Evaluation of the proposed framework:

1. What is your opinion on the comprehensiveness in terms of contents of the proposed framework?

2. In terms of logical flow of the Framework, What is your opinion?

3. What is your opinion on the subject covered by the proposed framework?

4. In regards, to the understanding of the presented Framework, What is your opinion?

5. Do you have further comments/suggestions regarding any areas that need to be improved/included/deleted within the proposed framework?

6. Would you recommend the framework for use in the KSA construction organisations?